City of Regina

TRANSITIONAL AREA PARKING AND CIRCULATION STUDY

May, 1984

Stanley

TRANSITIONAL AREA PARKING AND CIRCULATION STUDY

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SECTION 1

INTRODUCTION

1.1 STUDY BACKGROUND

The Transitional Area located in the City of Regina comprises 32 square blocks bounded by Victoria and College Avenues, and Broad and Albert Streets immediately south of the downtown. The area currently contains a resident population of about 3300 people in a mixture of single family and apartment dwellings. A variety of commercial land uses are developed adjacent to Victoria Avenue, College Avenue, Albert Street and Broad Street. The Transitional Area is estimated to provide in the order of 5,000 employment opportunities.

The Transitional Area was, at one time, principally residential with house form buildings and walk-up apartments. Gradually, however, development pressures toward higher density residential and commercial land uses began to increase as growth proceeded in the City of Regina and in the downtown area in particular. This has resulted in the area consisting of a patchwork of land uses and building forms.

In recent years, considerable effort has been placed upon defining a formal development strategy for the Transitional Area in order to improve the quality of environment, to ensure harmoneous land use patterns and to preserve the traditional character and heritage of the area. The Planning Department and the Transitional Area Community Society have been instrumental in this effort which culminated in the Transitional Area Development Plan approved by City Council on October 25, 1983. The principal goals of the plan as it relates to this study are:

1. To provide for residential land use and a viable residential neighbourhood within the Transitional Area.

2. To provide for vehicular circulation, vehicular parking and pedestrian circulation which is supportive of the residential nature of the area.

In view of the above, the City of Regina commissioned a study of vehicular circulation, vehicle parking and pedestrian circulation in the Transitional Area. On September 26, 1983, Stanley Associates Engineering Ltd. was retained to undertake this study.

1.2 STUDY OBJECTIVES

The principal objectives of this study were identified as follows:

1. To study and evaluate vehicular circulation, vehicular parking and pedestrian circulation in the Transitional Area.

2. To specifically address the following basic concerns:

    - o high volumes of through traffic and pedestrian activity resulting in pedestrian/vehicle conflicts;
    - o vehicular traffic speed and noise;
    - o high levels of on-street parking;
    - o aesthetics/compatibility of surface parking lots with surrounding land uses and building forms;
    - o a relatively high percentage of the resident population which is vulnerable to an adverse pedestrian environment (ie. senior citizens).

3. To study and analyze the inter-relationships between traffic characteristics and present and future land uses.

4. To recommend an overall circulation and parking strategy for the Transitional Area.

The area defined for this study is shown in Figure 1.

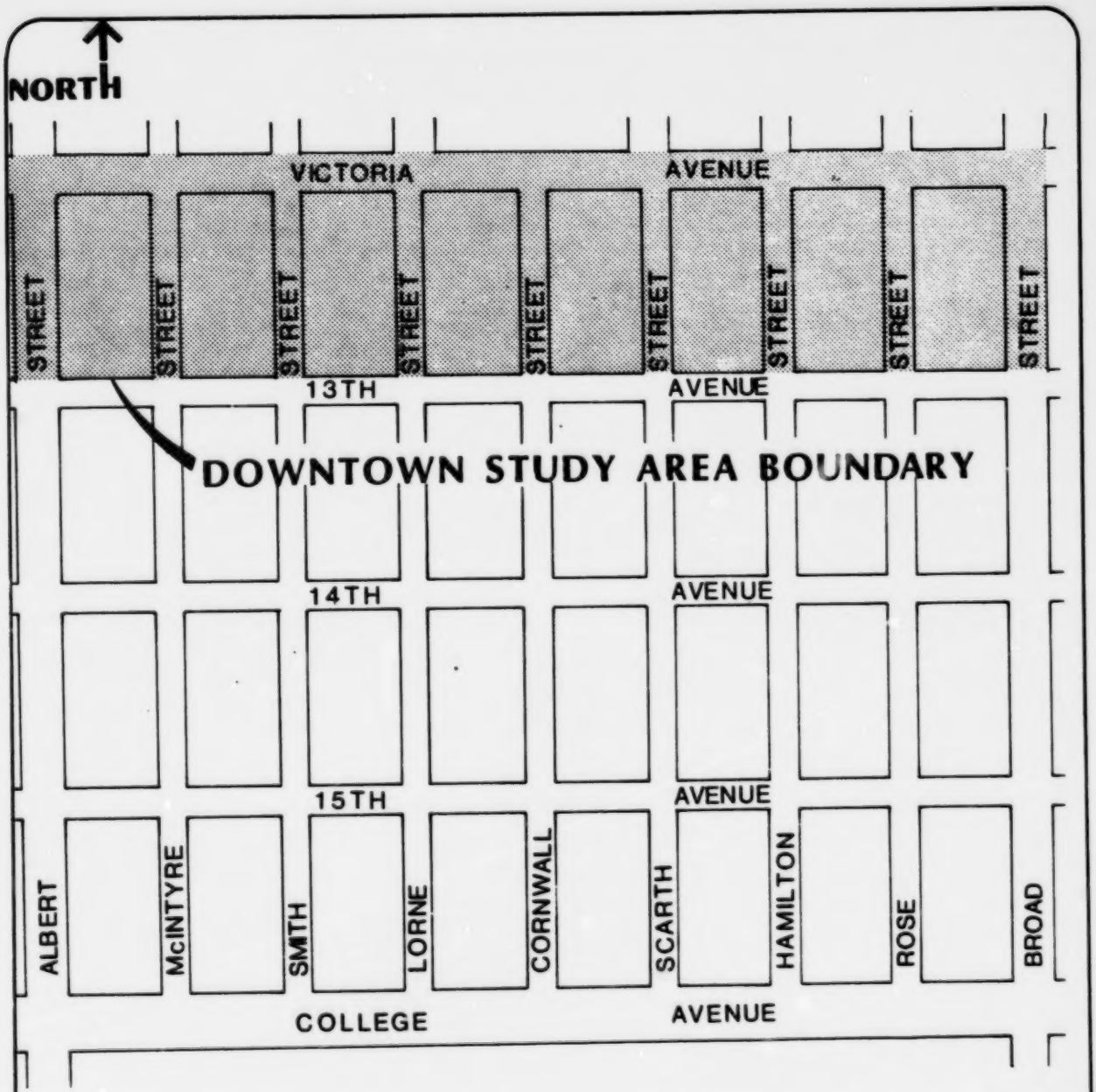

FIGURE 1
THE TRANSITIONAL AREA

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1.3 STUDY PROCEDURE

The study was conducted under the direction of a Study Steering Committee made up of representatives from the following:

1. Public Works and Engineering Department.
2. Planning Department.
3. Transitional Area Community Society.
4. Transit Department.

An initial meeting between City personnel and Stanley Associates Engineering Ltd. to transmit available background reference reports, plans and survey data was held on September 29, 1983. Subsequent to this, on October 5, 1983 a project mobilization meeting was held with the Study Steering Committee to formalize the study procedure and timing and to clarify study expectations.

A field survey program was designed to supplement the available background information and this program included the following:

1. A total of 23 automatic traffic recorder counts within the Transitional Area.

2. A number of short-duration intersection turning movement counts at peripheral points to the Transitional Area.

3. A total of 9 radar surveys within the study area.

4. Short duration counts of pedestrian flows at a number of intersection locations within the area.

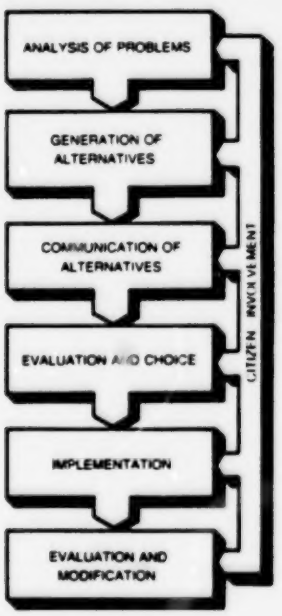
5. A questionnaire survey of residents and businesses in the area.

The traffic survey program was undertaken by the staff of the City of Regina and the questionnaire was distributed and collected by the Transitional Area Community Society.

These surveys were used in the development of the recommended plan and will be useful in evaluating plan effectiveness after implementation.

The study procedure recognized the need for public participation in the development of the recommended plan. A neighbourhood traffic improvement plan generally requires the clear support of local residents to be successful. The plan must reflect as much as possible, the values and opinions of local residents and not merely the technical opinion of experts and administrators. The general process used in other cities generally takes the following basic steps, each requiring public involvement:

1. Analysis of problems and needs.
2. The generation of alternative measures.
3. The communication of alternative measures.
4. Evaluation of alternatives and selection of recommended plan.
5. Implementation of the recommended plan.
6. Evaluation and modification of the recommended plan.



SECTION 2

NEIGHBOURHOOD TRAFFIC MANAGEMENT

2.1 EVOLUTION OF ROADWAYS IN OLDER RESIDENTIAL AREAS

Historically, in the development of urban areas, the most pressing immediate need was to provide basic access to properties. The easiest, most versatile and economic way of providing this access was to construct a simple roadway grid which provides access to each property and direct routes to every other property in the developed area. Often, there has been little or no distinction between the various roadway components of the grid with respect to size, function, continuity, etc.

This roadway system works well when traffic volumes are low on the individual roadway components of the grid and when the land use categories within a given area are generally uniform. However, as the urban area grows, redevelopment occurs and the function of some of the original grid roadways change. Unfortunately, since there is little distinction between the actual design of the various roadways in the grid, the ones which are most heavily used are the ones which best satisfy the new traffic demands which have been generated. Short of closing specific roadways or upgrading others to become more attractive, there is little that can be done to prevent this natural evolution from taking place.

Accordingly, as a community grows, existing roadways within the built up areas assume new roles as traffic arteries. Usually these roadways were not designed for this purpose. In addition, adjacent land uses are usually not compatible with the new function which the roadway must perform. In residential areas this has often led to traffic concerns related to noise, safety, nuisance, invasion of privacy, crime, etc. Continued and increasing conflict between residential land uses and traffic activity results in deteriorating values and pride, migration of the population, changes in social structure of the population and pressures for redevelopment.

The Transitional Area, one of Regina's oldest residential developments, is an example of the traditional gridiron design and consequently, an evolution similar to that described above has taken place.

2.2 CURRENT PLANNING IN NEW RESIDENTIAL AREAS

The weaknesses inherent in the traditional grid pattern of development have been recognized resulting in the development of new planning principles for new residential areas. These new principles can be categorized as follows:

1. Differentiation
2. Segregation
3. Integration

These general principles, which have been successfully used in new residential areas, are often applied to develop improvement schemes for older areas established with the grid design.

Differentiation

The design of new residential areas have revolved around the differentiation of roads and streets by traffic function. In North America, this is commonly referred to as a hierarchical system of streets. The basic principle is to group traffic activity of similar character on roadways so that the traffic stream is as homogenous as possible. To complement the character of the traffic intended, the design of the roadway and the land use pattern varies.

Streets are differentiated on the basis of the amount of traffic expected to utilize them, the proportion of the traffic which will be gaining access to local properties and the proportion of traffic which will be non-local (i.e. passing through the area).

In North America, there are three common categories of roadways in new residential areas for differentiation purposes. These include:

1. **Local Roadways:** roadways which function mainly to provide land access. These roadways are most compatible with low rise single family residential development as traffic volumes are low (usually less than 1000 vpd), parking is permitted on street, traffic speeds are generally low and large commercial vehicles are restricted. This permits the street to meet the environmental safety, social and activity needs of adjacent residential development.

2. **Collector Roadways:** roadways which provide both land access and traffic movement and treat them with equal importance. These roadways generally carry more traffic at higher speeds than local streets (usually in the 3000 - 8000 vpd range), parking is usually permitted with some restrictions and commercial vehicles are limited. Traffic flow is often interrupted due to parking and access activity but a larger pavement surface and right-of-way is provided to reduce the effects of this.

   Single family, low rise higher density residential development, neighbourhood commercial uses and public facilities are normally located adjacent to these roadways. Provided that the collector does not serve too large an area and it consists of a high proportion of traffic which is local, serious conflicts between the environmental, safety and social needs of adjacent residents normally do not develop.

3. **Arterial Roadways:** roadways which function to move traffic. These roadways carry more traffic at higher speeds than collector roadways (usually up to 30,000 vpd), parking is often restricted and commercial vehicles are usually permitted. These roadways are designed with few opportunities for direct land access in order to reduce conflicts between accelerating and decelerating traffic.

   These roadways are not normally compatible with low rise residential development as the amount and type of traffic activity conflicts with the social, environmental and safety needs of this type of development.

The hierarchical system of roadways generally operates as follows. Arterial roadways distribute traffic between residential, industrial and business districts in the City. The

collector roadway distribute traffic between arterial roadways and the local access roadways. The local roads distribute traffic between land parcels and collector roadways.

Most new residential areas in North America and world wide incorporate a system of differentiation.

Segregation

Separating motor vehicle traffic from pedestrian and bicycle traffic in time and space in new residential areas is referred to as segregation. In the segregated system, conflicts between vehicles and pedestrians and cyclists are reduced to a minimum and, where crossings are unavoidable, they are carefully designed.

These systems orient residential land use activity centres and roadway patterns in a fashion which permit pedestrian and bicycle routes to be totally separated from traffic activity or to minimize the number of roadway crossings and traffic conflicts. To make segregated areas more efficient, barriers such as rails, gates, bollards, etc. are used to prevent vehicles from entering pedestrian areas or to keep pedestrians apart from traffic.

At locations where pedestrian road crossings are unavoidable, these areas of potential conflict are designed carefully. Design details often considered are:

1. The width of the cross-walk;
2. The provision of refuge islands;
3. The use of signs, pedestrian signals or flashers;
4. The provision of adequate lighting;
5. The provision of pararamps;
6. The need for pedestrian tunnels or overpasses.

Many countries, including Canada incorporate some amount of segregation in designing new residential areas. Sweden has developed areas which incorporate almost complete segregation of pedestrians and cyclist from motor vehicles.

Integration

Integration is a method which is relatively new for residential areas in North America. It is an entirely opposite approach to segregation in that all types of traffic are integrated on residential streets. In order that this approach is compatible with the environmental, safety, social and activity needs of residential development, the streets are designed in a fashion intended to adapt traffic operating conditions to that which are characteristic of pedestrian traffic. The integration of pedestrian, cyclists, and motor vehicles on the same surface requires that the speed of vehicles be adjusted to approximate the speed of pedestrians.

Integration of pedestrians and motor vehicles is specially regulated only in the Netherlands where an area may be designed as a "Woonerf" for which special traffic regulations apply. The residential functions clearly predominate over any provision for motor vehicle traffic. Integrated systems are being proposed in the United Kingdom, Sweden, Denmark, and Belgium.

In North America, some forms of integrated designs have been developed in commercial areas where street closures have permitted the development of pedestrian malls or transit malls which permit some local traffic activity on the same surface as pedestrians. Integrated bicycle paths are also common.

2.3 THE FUNCTION OF RESIDENTIAL STREETS

Residential access streets in traditional residential areas are required to perform several traffic functions and at the same time, meet the needs of residential activity. Some of the more desirable residential needs include:

1. Pedestrian access to land parcels;
2. Safe routes for cycling and walking;
3. Space for outdoor recreation;
4. Opportunities for social contacts;
5. A clean, visually attractive landscape;

6. An environment reasonably free from traffic noise, vibrations, fumes and visual intrusion.

Some of the important traffic functions required include:

1. Vehicular access to land parcels;
2. Travel between individual land parcels in the immediate area;
3. Access from land parcels to the primary roadway network;
4. Routes for door to door delivery or public transit;
5. Safety.

The above functions and needs are normally compatible for older inner city neighbourhoods with the gridiron design. However, urban growth particularly in the downtown area often imposes the need for these roadways to perform an additional through traffic function as a result of the evolution process and capacity constraints on adjacent arterial roadways. The characteristics of this traffic in terms of volume, speed, composition and behaviour causes conflicts with the general community needs.

2.4 OVERVIEW OF RESIDENTIAL TRAFFIC MANAGEMENT STRATEGIES

Traffic management techniques employed to resolve traffic concerns in older residential areas have the broad goal of altering the amount and type of traffic activity on residential streets to achieve greater harmony between the environmental, social and activity needs of a residential area and the traffic functions of the street system. The general objectives of these plans are to:

1) Improve safety for all road users;
2) Provide reasonable freedom from traffic noise, vibration, fumes, and visual intrusion;
3) Provide a visually attractive streetscape.

These objectives are normally achieved by discouraging or preventing through traffic from using residential access streets and by influencing satisfactory standards of behaviour in those drivers which remain on the street.

The approaches to neighbourhood traffic management in other cities have taken a variety of approaches from broad schemes on a City-wide scale or selected traffic control improvements on an ad hoc basis on individual streets. Generally, the schemes used can be classified on the following scales.

1. **Street**

   This involves the implementation of scattered street improvements in response to particular problems on an ad hoc basis. For example, a neighbourhood complains and a stop sign is put in. The focus is on safety and there is little controversy as such improvements are usually minor in nature.

   This scale of implementation is recommended for less severe traffic problems where a relocation of relatively low traffic volumes will result.

2. **Neighbourhood**

   In situations where there are more serious, wide spread traffic problems, traffic management schemes have been developed on a neighbourhood scale. This permits a more comprehensive plan to be developed with its focus on improving overall traffic conditions within a self-contained residential unit. On a neighbourhood basis, street improvements are planned to achieve an overall benefit for the entire neighbourhood and schemes which merely relocate the problem from one street to another parallel street within the neighbourhood are avoided.

   This scale of improvement has been common in North America and has the advantage over more comprehensive approaches in that it is manageable in terms of participation and the shifts in traffic are not likely to overburden the traffic system or stretch emergency services.

3. City-Wide

Traffic management plans on a city wide scale are appropriate for the most severe traffic problems. In situations where congestion on the primary arterial roadway network is the major cause of undesirable traffic volumes on residential streets and the relocation potential for traffic activity on more desirable routes is limited, a total city-wide transportation management approach which combines arterial system improvements with neighbourhood traffic schemes is necessary.

Due to the comprehensiveness and scale of this approach, the massive changes in traffic patterns and driver behaviour required and the number of people affected, traffic management schemes on this scale are most difficult to achieve due to public opposition.

The City of Regina, and the Transitional Area in particular, is at a point in its growth where intensive city-wide measures are not yet necessary. Through the development of neighbourhood scale traffic management plans where required, the character of residential areas can be preserved while changes in traffic patterns can be achieved gradually with greater probability of acceptance and success.

Regardless of the scale of neighbourhood traffic management programs, traffic improvements in residential areas have been achieved with varying degrees of success using a number of alternative traffic control tools. These can usually be categorized as follows:

1. **Passive Controls:** controls which tend to command or suggest a driver behaviour pattern but depend on driver choice to comply in order to achieve desired effects. Passive controls are generally low cost and usually have less secondary impacts than physical controls. They are more easily violated and require some degree of enforcement to be effective.

2. **Physical Controls:** controls which physically induce or preclude specific patterns of driver behaviour. These often involve substantial engineering and construction costs and have a great potential for causing secondary

impacts both positive and adverse in nature. These controls are usually effective in achieving the intended change in traffic patterns.

2.5 ALTERNATIVE PASSIVE TRAFFIC CONTROLS

The following is a brief description of alternative passive controls often used in residential areas, an assessment of their general effectiveness in achieving the desired results and identification of other probable secondary impacts which may result from their use.

1. **Stop Signs:** signs which assign the right-of-way at an intersection to reduce vehicle-vehicle and vehicle-pedestrian conflicts. Stop signs have been used for **speed control,** to discourage **through traffic** and to **improve safety** in residential areas with varying degrees of success.

   Generally, **safety** has only been improved in situations where there is sufficient vehicle and pedestrian traffic to warrant the installation of stop signs. If the sign is not warranted, the sign may have a reverse effect as drivers perceive it as an inconvenience only and tend to disregard it by not coming to a complete stop.

   For **speed control,** stop signs are generally ineffective if not warranted for safety reasons. Studies have shown that vehicle speeds are reduced only in the vicinity of the stop sign. Between signs, speeds are normal or possibly increased from that prior to sign installation. Stop signs installed strictly for speed control can cause more accidents and increased traffic noise.

   Stop signs have been successfully used to discourage **through traffic** only when other more convenient alternative routes become available. However, they may become only a short-term solution until alternative routes become congested to a point where they are no longer more convenient. The installation of stop signs strictly for the purpose of

controlling through traffic often causes increased accidents and traffic noise.

2. **Speed Limits:** signs which define the legal speed limits on streets. In residential areas speed limits often vary from 25 km/hr (ie. in school zones) to 50 km/hr. The use of signs for **speed control** has been found to be ineffective without continuous enforcement. Drivers tend to travel at speeds which are comfortable to them based on the design and character of the street with little regard to posted speed limits.

3. **Turn Prohibitions or No Entry Signs:** signs which command traffic not to make specific turning movements at street intersections or not to enter a street. These signs are often used in an attempt to restrict traffic from entering into residential streets. The signs are normally intended to discourage **through traffic** but must also apply to local residential traffic as well, often causing inconvenience for local residents. Turn restrictions and no entry signs have been found to be generally ineffective and impractical due to disobedience and the degree of enforcement required. They are, however, more effective when combined with other engineering measures such as one-way streets of significant length and/or physically narrowing the street entrance.

4. **Neighbourhood Signs:** signs which warn motorists of entry to a residential area. These signs have been used to advise motorists of the need to slow down or use caution in driving through the area. The signs have been used to attempt to influence **driving attitudes** and **speeds** in residential areas and are commonly used in school and recreation areas. These signs are generally ineffective except when combined with other physical engineering methods of speed control.

5. **Crosswalk Signs and Markings:** signs and markings which are used to assign road right-of-way to pedestrians crossing a street. Crosswalk signs and markings indicate to drivers that pedestrians have the right-of-way and are used to attempt to improve **pedestrian safety** by channelizing pedestrians

to a crossing point, reducing the number of locations where pedestrian-vehicle conflicts may occur and by assigning right-of-way. Signs and markings alone are normally used only for low volume roads. Their effectiveness can vary depending on the location and have been found in some cases to actually reduce safety due to the false sense of security that they often give pedestrians. Generally, they are more effective when combined with physical engineering traffic control measures.

6. **One-way Streets:** installation of signs and changes in the traffic bylaw to convert streets from 2-way operation to one-way operation. One-way streets have been used to **improve safety** and reduce **through traffic** but have not always been successful.

   Safety is often improved at intersections due to the reduction of traffic conflicts. Often however, one-way streets induce an increase in traffic speeds as traffic in one direction only experiences greater lateral clearance from obstructions unless the street width is physically narrowed. This can be counter-productive from a safety aspect.

   Through traffic can be reduced by implementing a maze of alternating one-way street sections in order to cause through routes to be very indirect or to limit the number of inbound streets to the area. This type of approach has often been unsuccessful due to the confusion and frustration caused for both residents and through traffic and the resultant violations and safety problems which develop. If not properly planned, one-way streets can increase through traffic movements as traffic flow is smooth and speeds can increase.

7. **Parking Controls:** the organization and control of on-street parking through the use of signs and markings have been used effectively for **speed control.** On-street parking narrows the street width and generally induces slower speeds. The conversion from parallel parking to angle parking can be effective in both reducing speed and providing increased on-street parking. On one-way streets, angle parking can improve **pedestrian safety**

by making pedestrians attempting to cross the street more visible to the approaching driver.

2.6 ALTERNATIVE PHYSICAL TRAFFIC CONTROLS

The following is a brief description of alternative physical controls often used in residential areas, an assessment of their general effectiveness in achieving the desired results and identification of other probable secondary impacts.

1. **Speed Bumps:** a small, abrupt bump in the street pavement usually varying in width from 0.20 m to 0.90 m and in height from 5 cm to 13 cm. Speed bumps have been used in residential areas in several countries for the purpose of **speed control** and reducing **through traffic**. When spaced sufficiently close they can be effective. However, their design may influence some drivers to pass over them at higher speeds where the riding discomfort of the bump is not as evident. Generally, however, their major disadvantages are that they cause increased traffic noise, riding discomfort, create a hazard to cyclist and vehicles, especially during slippery conditions and create a problem for buses and fire trucks. These problems may lead to law suits.

2. **Street Humps:** are elongated streep bumps or an undulation in the pavement usually about 3.75 m in width rising gradually to a maximum height of 10-15 cm in the centre. As the width of the hump is greater than the wheel base of a car, the hazard, noise, discomfort and speed problems associated with the regular speed bumps are reduced considerably. Street humps have been successfully used to reduce **speeds** and **through traffic** in residential areas when spaced sufficiently close and due consideration to design details is given. Vehicles with long wheel bases such as buses and trucks experience more riding discomfort than passenger vehicles.

3. **Raised Crosswalks and Platform Intersections:** a section of road pavement raised to the level of the sidewalk and often constructed with materials

quite different from the roadway surface. They perform very much like elongated street humps and serve to reduce **speeds** and **through traffic** if spaced sufficiently close. They are used to improve **pedestrian safety** by clearly giving the impression that they designate pedestrian territory. If the approach grade is gradual, riding comfort in vehicles with longer wheel bases is less than with streep humps, although street drainage systems may be affected.

4. **Chokers:** physical narrowing of the street pavement at street entrances by extending the curb and sidewalk area into the street travelway. Installed independently, these devices enhance **pedestrian safety** by creating an extended vantage point from which pedestrians can view traffic, reducing the width of pavement to cross and inducing entering traffic to slow down. Chokers can also improve the effectiveness of passive controls such as no-entry, turn prohibition and neighbourhood signs in reducing **through traffic** by providing a location for these signs closer to the driver's line of sight.

5. **Entrance Gates:** gateways to residential streets which can consist of brick pillars, wrought-iron railings and gates. These devices are principally considered to reduce **through traffic** by identifying the entrance to a residential area and/or by requiring a ticket or coin entry to activate the gate. Entrance gates can physically prevent passage by a restricted vehicle or merely reduce the width of the street entrance similar to the effect of a choker. These devices can be costly and inconvenient for residents or visitors. They may also enhance the effectiveness of passive controls.

6. **Narrowing Streets:** narrowing the travelway of the street by widening sidewalks, rearranging parking and/or the provision of green strips and trees. Residential streets have been narrowed in order to induce lower **speeds** and to make streets more pedestrian oriented. Narrowed streets have generally been found to induce lower speeds and to improve the effectiveness of lower speed limit signs. Narrowed streets can reduce safety for cyclists as vehicles are forced closer to the curb.

7. **Traffic Circles and Islands:** traffic circles and islands have been used to reduce traffic speeds. They serve to induce lower speeds by narrowing the travelway width and by physically restricting drivers from flattening their angle of approach at intersections.

8. **Semi-Diverters:** physical barriers which permit travel in one direction while prohibiting it in the other. The device is often used to prevent vehicles from entering a street in order to reduce **through traffic** and reduce the area of pedestrian-vehicle conflict. Normally placed at intersections, these devices are generally effective but can be violated by drivers making erratic maneuvers at intersections. When combined with no entry or turn prohibition signs, the effectiveness of these devices to control through traffic is improved.

9. **Diverters, Barriers and Cul-de-sacs:** diverters are usually placed diagonally across four-way intersections to turn a grid pattern of streets into loops and crescents. Barriers are placed squarely across the street at one end to prevent entry or exit at one end. To enable vehicles to more easily turn around at the end of these streets, cul-de-sacs are often used. These devices have been found very effective in reducing **through traffic** but care must be taken in locating them to avoid traffic relocation to other undesirable residential streets or lanes. These devices also restrict traffic movements by residents and emergency vehicles unless special gaps or gates are provided.

   These devices are often installed using iron railings, concrete blocks, bollards or wooden poles on a temporary experimental basis. Permanent installations are often more expensive and visually appealing requiring the need to relocate utility outlets and to construct new curb and gutter facilities.

10. **Signals and Flashers:** active traffic control devices which convey right-of-way and proper behaviour to pedestrians and drivers. These devices have been used principally to improve **traffic efficiency** and **safety** for both

pedestrians and vehicular traffic at locations where they are warranted. These controls can have totally opposite impacts if not carefully installed. For example, they can reduce safety and efficiency if they are not warranted due to traffic and pedestrian demands. They can divert through traffic due to the delays they impose or alternatively, they have been known to induce more through traffic particularly if located on residential street intersections with major roadways. Traffic speeds can be influenced by controlling the offsets of a group of closely spaced signals.

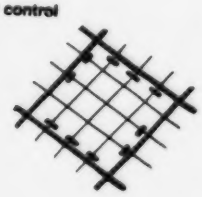
Signals and flashes can be useful management tools but their effectiveness and impacts can vary significantly and care must be taken in their installation.

2.7 ALTERNATIVE TRAFFIC CONTROL SYSTEMS

Physical and passive traffic control measures can be used individually or collectively to control traffic in neighbourhoods. A variety of traffic control systems can be used, many of which fall into the following categories.

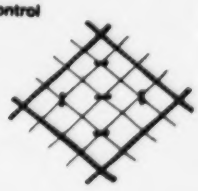
1. **Boundary Control:** involves the use of traffic control at the entry points to neighbourhoods in order to restrict the number of entrances. Boundary control can be effective in reducing **through traffic** but has a major disadvantage in that access to the neighbourhood for local traffic is limited and inconvenient.

Boundary control



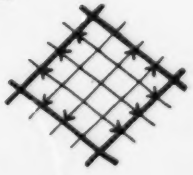
2. **Internal Control:** involves the use of traffic controls internal to the neighbourhood in order to make it inconvenient or imposssible for traffic to travel through the neighbourhood. This system has the advantage of not limiting access to the area. It is less aggressive than boundary control but it can cause driver confusion and frustration at least initially. Internal control can be inconvenient to local traffic and care must be taken in selecting and locating controls to ensure access to properties and to minimize the diverting of traffic to lanes. Cul-de-sacs, one-way streets and diverters are often used in this system.

Internal control



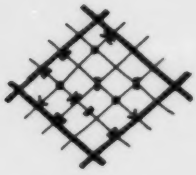
3. **One-Way Exits:** essentially similar to boundary control but involve the use of many one-way streets exiting the area and few streets to enter the area. This system is less costly and visible than one using physical barriers but may require strict enforcement to ensure obedience. This system can reduce **through traffic** and although egress is not as restricted as with boundary control, ingress is inconvenient for residents.

One-way Out



4. **Hybrid or Ad Hoc:** involves a combination of the above three systems and use of a mixture of passive and physical controls. This type of system is less uniform and can cause greater confusion. However, it can be more acceptable for local residents as each street may have different needs and resident desires. It is particularly advantageous if the neighbourhood is not homogeneous in terms of land uses, patterns and social profile.

Ad Hoc



2.8 PARKING CONTROLS

Residential area parking controls are applied for many reasons including:

1. Improvement of pedestrian crossing safety
2. Increasing the availability of parking for local use
3. Assigning priority for on-street parking to specific types of land uses
4. Improving visual amenity
5. Reducing traffic speeds

Pedestrian crossing safety and traffic safety can be attained through the arrangement and restriction of on-street parking. Restricting parking at intersections and in the vicinity of crosswalks can improve traffic safety and pedestrian safety at the expense of reducing the amount of parking available. Allowing more on-street parking or introducing angle or 90 degree parking can reduce the travelway width of the street and induce lower travel speeds.

Time restrictions (i.e. through signing or meter control) on parking duration can give parking priority for or discourage selected users. For example, 1 or 2 hour parking limits can encourage on-street parking use for visitors and shoppers while long-term employee or resident parking on-street is discouraged. Metered parking can provide revenue from on-street parking activity although it can also serve to shift parking activity to free parking areas. Time restricted parking requires regular enforcement to be effective.

On-street parking priority can be given to local residents and businesses through the use of a parking permit system. These systems have been used in areas of parking congestion to permit only local residents or employees to park on-street. The permit system can be combined with parking time restrictions to allow short-term parkers to share street parking.

Parking permits are provided upon proof of location of residence or employment and stickers supplied are displayed in the parked vehicle. Parking permits can be renewed annually or semi-annually. A parking permit system requires administrative control by the municipality and enforcement to ensure the system is effective and not abused. The costs to adminstrate the system may be off-set by charging a fee for the permit.

SECTION 3

STUDY AREA

3.1 LAND USE

Existing

The Transitional Area consists of a population of about 3,300 people and about 2,455 households based on the 1981 census. The average household size is about 1.3 persons. The population profile is summarized below:

TABLE 1

POPULATION PROFILE

Age Group	No. of Persons	Percent of Total
0-14	150	4.5%
15-54	1,570	47.4%
55 and over	1,590	48.1%
Total	**3,310**	**100.0%**

From the above, it is evident that over 50% of the residents of the Transitional Area representing the younger and older age groups are vulunerable to the traffic conditions prevelant in the area. This is over 10 percent higher than the overall average in the City of Regina.

Single family land uses predominate in the southwest part of the Transitional Area where house-form buildings are frequent. Approximately half of the house form buildings have been converted to multiple dwellings and several more have been converted to combined residential/commercial uses. Apartment residential areas are

situated between 13 Avenue and 14 Avenue and to the east sector of the Transitional Area.

It is estimated that about 5,000 employment opportunities are available in the study area due to the local commercial and institutional land uses. These land uses are concentrated in the north between 13 Avenue and Victoria Avenue and along the periphery of the area adjacent to Albert Street, Broad Street and College Avenue. Of notable mention are:

1. Hotel Saskatchewan, Saskatchewan Power Corporation Building, Motherwell Building, Bus Depot and Humford House in the northeast;

2. The Co-operative Insurance Building and Parkview Place adjacent to College Avenue;

3. The Court House and the YMCA in the northwest portion;

4. Central Collegiate and the vacant Strathcona School sites in the southeast.

Several off-street parking lots remain as another predominant land use scattered throughout the area. The principal parking areas are located in the north, with some significant parking in the east and southeast.

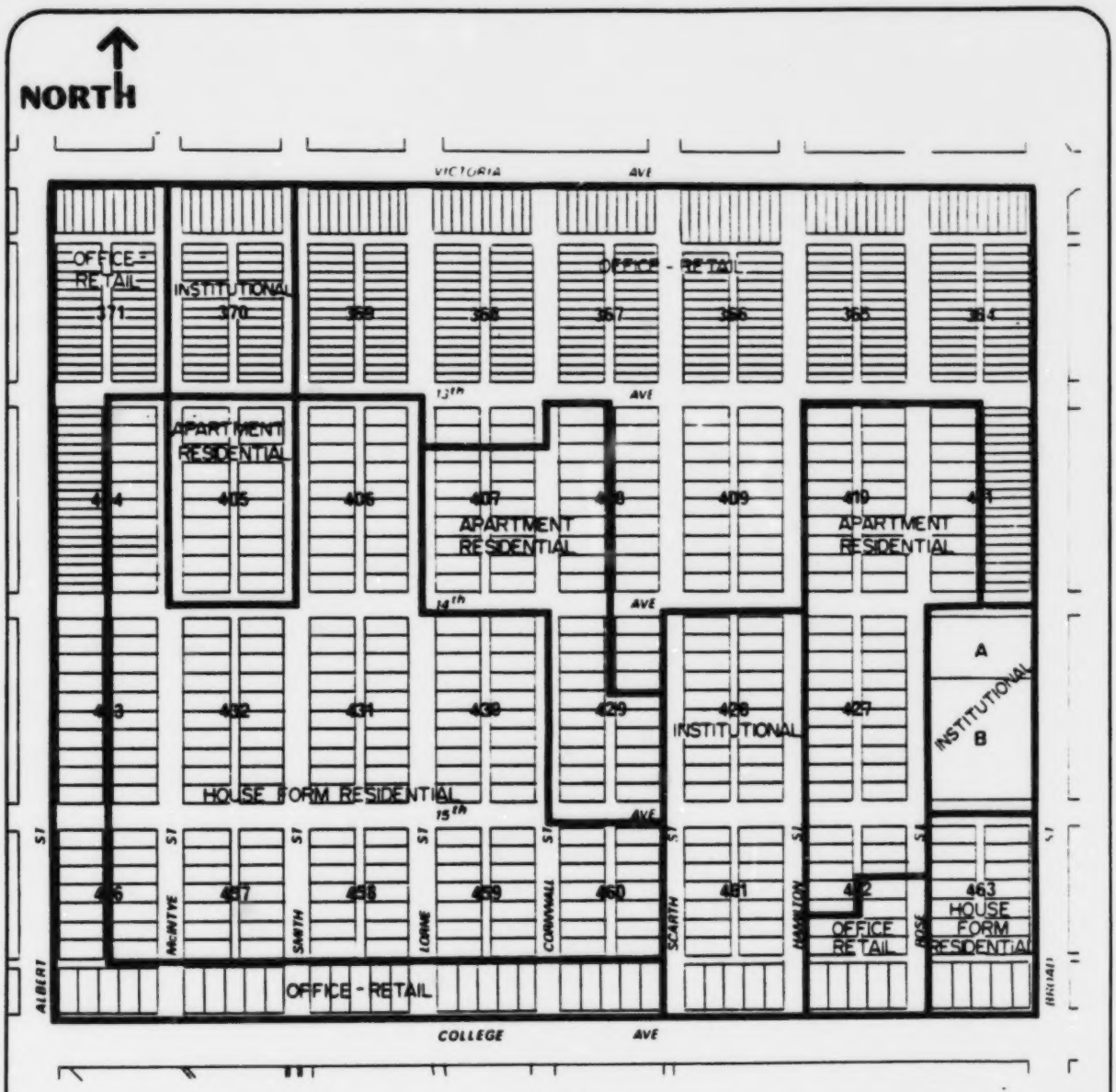
The generalized land use is shown in Figure 2.

Future

The Transitional Area Development Plan identifies future land use plans for the area. Generally, the plan indicates the following land use patterns:

1. Low-rise residential commercial in the southwest;

2. Medium-rise and high-rise residential between 13 Avenue and 14 Avenue and in the southeast;



SOURCE TRANSITIONAL AREA DEVELOPMENT STRATEGY

REVISED JUNE, 1983

FIGURE 2

PRESENT GENERALIZED LAND USE

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3. Commercial development north of 13 Avenue which is within the boundaries of the downtown and scattered pockets of inner city commercial development between 13 and 14 Avenues;

4. Major arterial commercial along Albert Street and Broad Street.

5. A residential/commercial designation along College Avenue.

The Transitional Area Development Plan is illustrated in Figure 3.

3.2 TRANSPORTATION

Existing

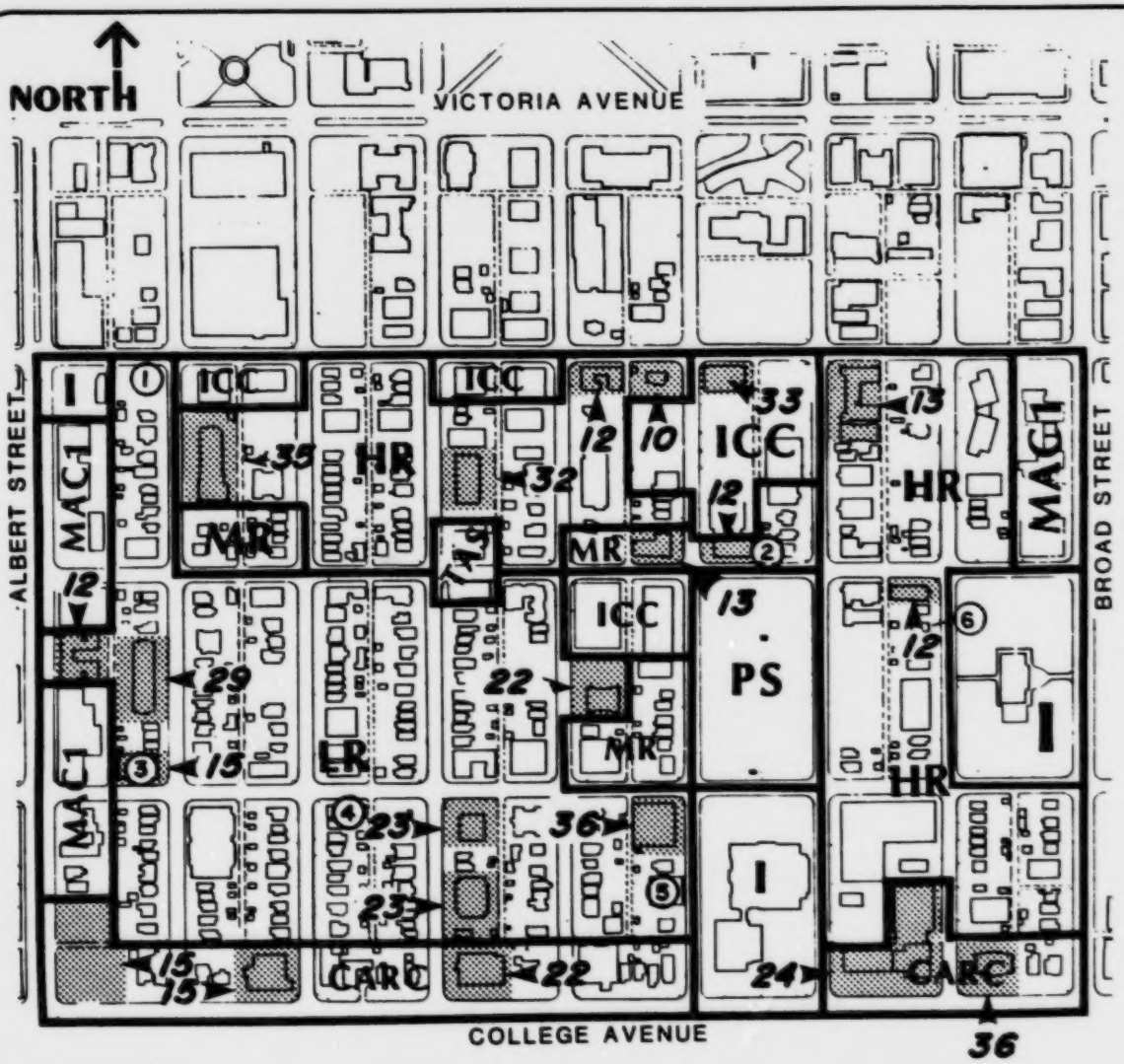
The Transitional Area is bounded on all four sides by major arterial roadway facilities which perform very important functions in the movement of traffic into and out of the downtown area and across the City. These include:

1. Victoria Avenue - a 4-lane divided arterial roadway with daily traffic volumes in the order of 22500 vpd. The roadway also provides metered on-street parking spaces;

2. College Avenue - a 4-lane divided arterial with daily traffic volumes approaching about 20000 vpd. Two lanes of on-street parking are also provided;

3. Albert Street - a 4-lane divided arterial with daily traffic volumes in the range of 35000 vpd. On-street parking is allowed for 1 hour limits except during A.M. and P.M. peak periods when the parking lanes serve as bus lanes;

4. Broad Street - a 4-lane divided roadway with traffic volumes in the order of 25000 vpd. Similar to Albert Street, this roadway provides short-term



LAND USE ZONES (Proposed Zoning)

Legend

Transitional Area Residential

LR - Low-Rise Residential/Commercial District (Height = 8.25 to 15m; FAR = New infill 3.10, House-Form Lot infill 3.30)

MR - Medium-Rise Residential District (Height = 15m; FAR = 3.5)

HR - High-Rise Residential District (Height = 30m; FAR = 7.5)

MAC1 - Major Arterial Commercial 1 (15m)

ICC - Inner City Commercial (15m)

TAS - Transitional Area Service

CARC - College Avenue Residential/Commercial (Height = 8.25 to 15m; FAR = New infill 3.10, House-Form Lot infill 3.30)

I - Institutional

PS - Public Service

SPECIFIC USES:

1. 2104 McIntyre Street
2. 2014 - 14th Avenue
3. 2270 McIntyre Street
4. 2305 Smith Street
5. 2332 Scarth Street
6. 2218 Rose Street

22 Special Implementation Areas - Height limit in metres

FIGURE 3
TRANSITIONAL AREA DEVELOPMENT PLAN

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on-street parking except during peak periods when the parking lanes are used as additional travel lanes for buses.

Within the Transitional Area, the street system is in the form of alternating one-way streets. The streets are similarly designed generally providing two travel lanes and two parking lanes with a total pavement width varying from 12m to 13 m. On-street parking in the area is generally restricted to 2 hours between 0800 and 1800 hours.

Traffic signals are provided on Albert Street, Broad Street and Victoria Avenue at all exit points to the area (with the exception of McIntyre Street). Stop signs control traffic movements within the area with no specific consistent pattern. Hamilton Street and Lorne Street have no stop sign control and as such, traffic on these streets is given priority. On the other hand, traffic on McIntyre, Cornwall and Rose Streets is required to stop at all intersecting streets. Smith Street, Scarth Street and 13 Avenue have some stop sign control while more frequent stops are required on 14 Avenue and 15 Avenue.

Transit service is concentrated on Broad Street and Albert Street. However, 2 transit routes traverse the Transitional Area: Route 4 services Eastview and Normandy Heights. It is routed through the Transitional Area via College Avenue northbound on Lorne Street and southbound on Hamilton Street. The route also utilizes the 2300 block of McIntyre Street and the 2500 block of 15 Avenue to proceed west of Albert Street. The bus runs on a 20 minute frequency during the A.M. and P.M. peak periods and a 30 minute frequency during the remainder of the day. The Heritage Bus is also routed through the Transitional Area utilizing many of the internal streets and operating on a 1 hour frequency between 0830 hours and 2030 hours. Currently, other bus traffic serving the Bus Depot utilize portions of Hamilton Street and 14th Avenue.

Future

The Downtown Transportation Study completed in June 1980, outlines the future transportation needs for the downtown area. The main features of the recommended transportation plan as it affects the Transitional Area include:

1. The elimination of parking on Broad Street and Albert Street to provide 4 travel lanes and 2 bus lanes respectively;

2. The retention of the one-way street system in the downtown and in the Transitional Area as at present except for the conversion of Smith Street to two-way operation between College Avenue and South Railway Street.

With the exception of Smith Street, the study did not address specifically, the required functions of the streets in the Transitional Area with respect to accommodating traffic movements into and out of the downtown area. However, the study did attempt to retain continuity between street patterns north and south of Victoria Avenue.

In general, the plan appears to have been developed based on the assumption that Smith, Lorne, Rose and Hamilton Streets will perform some type of through movement function in providing access to the downtown area through the Transitional Area.

3.3 EXISTING TRAFFIC CONDITIONS

Traffic Volumes

Figure 4 summarizes the 1983 Average Weekday Traffic Volumes (AWDT) observed in the study area based on recent traffic surveys. Generally, traffic volumes range from 1000 vpd to 6500 vpd on streets in the Transitional Area. In total, about 58800 vpd enter and exit the Transitional Area on an average weekday. Traffic volumes on north-south streets are generally higher in the north end of the study area than in the south end.

With the exception of Cornwall Street at the southern boundary, all streets experience traffic volumes which are higher than that considered to be typical of a low density residential street (ie. greater than 1000 vpd).

Figure 5 shows the hourly change in the accumulation of vehicles within the Transitional Area during a normal weekday. The figure shows that vehicle accumulation increases dramatically between 0700 hours and 0900 hours to about 1500 vehicles. The total change in vehicle accumulation peaks at about 1000 hours (1600 vehicles) in the A.M. and 1400 hours (1700 vehicles) in the P.M.

Traffic Speeds

A number of radar speed surveys were conducted in the Transitional Area in order to evaluate traffic speeds. The results of the nine locations surveyed are summarized in Table 2.

TABLE 2

SUMMARY OF RADAR SURVEYS

	Location	Mean Speed (km/hr)	50th Percentile Speed (km/hr)	85th Percentile Speed (km/hr)	Percent Exceeding 50km/hr
1.	Lorne Street North of 14 Avenue	43	43	49	12%
2.	13 Avenue East of Cornwall Street	41	41	49	12%
3.	Cornwall St. South of 13 Avenue	38	38	43	3%
4.	Smith Street South of 13 Avenue	44	40	45	7%
5.	Scarth Street North of 15 Avenue	41	41	47	7%
6.	15 Avenue West of Smith Street	43	43	50	14%
7.	Hamilton Street South of 14 Avenue	40	40	45	6%
8.	Rose Street North of 14 Avenue	39	41	47	5%
9.	14 Avenue East of Lorne Street	36	36	42	1%

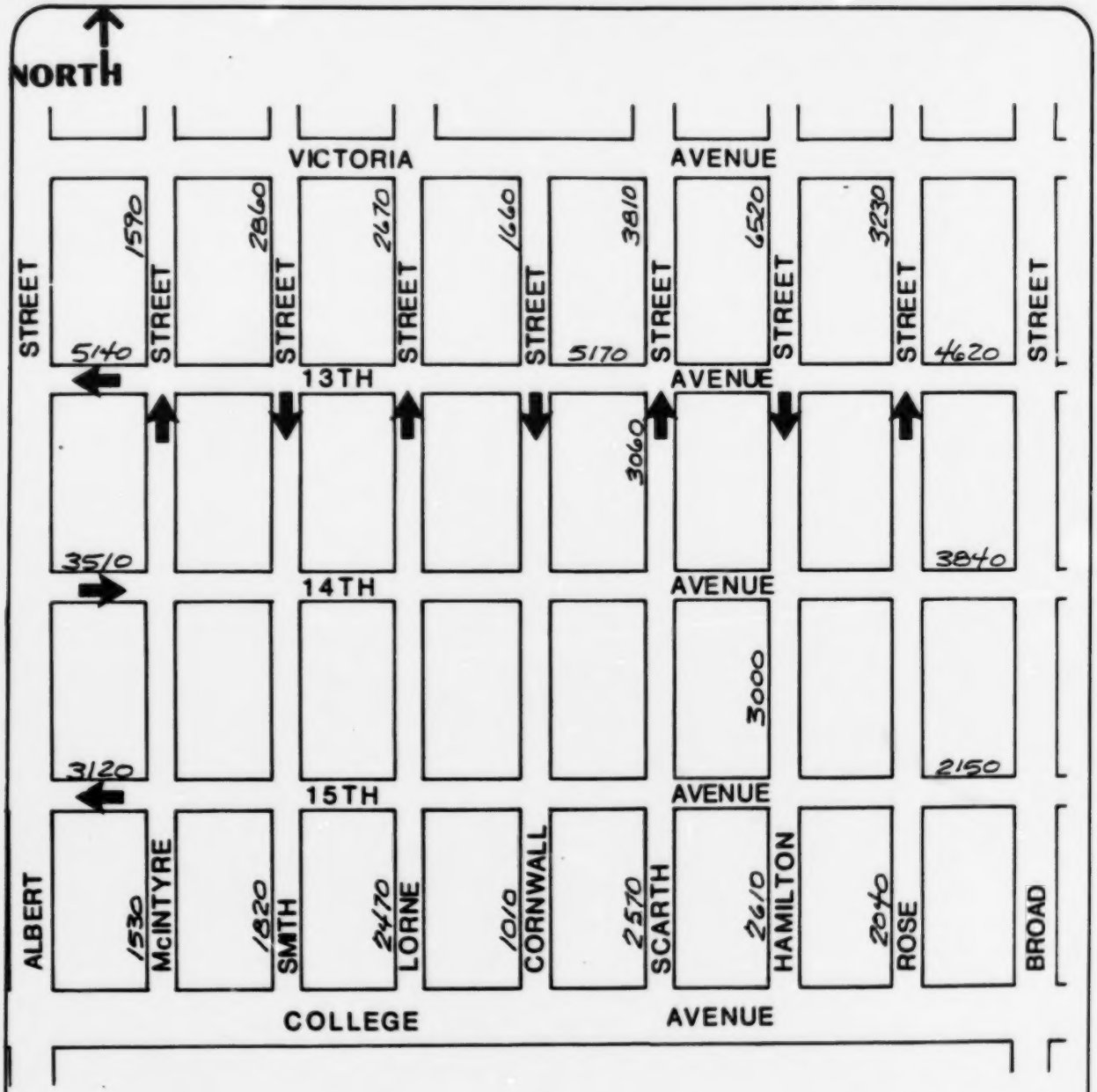

FIGURE 4
AVERAGE
WEEKDAY TRAFFIC VOLUMES

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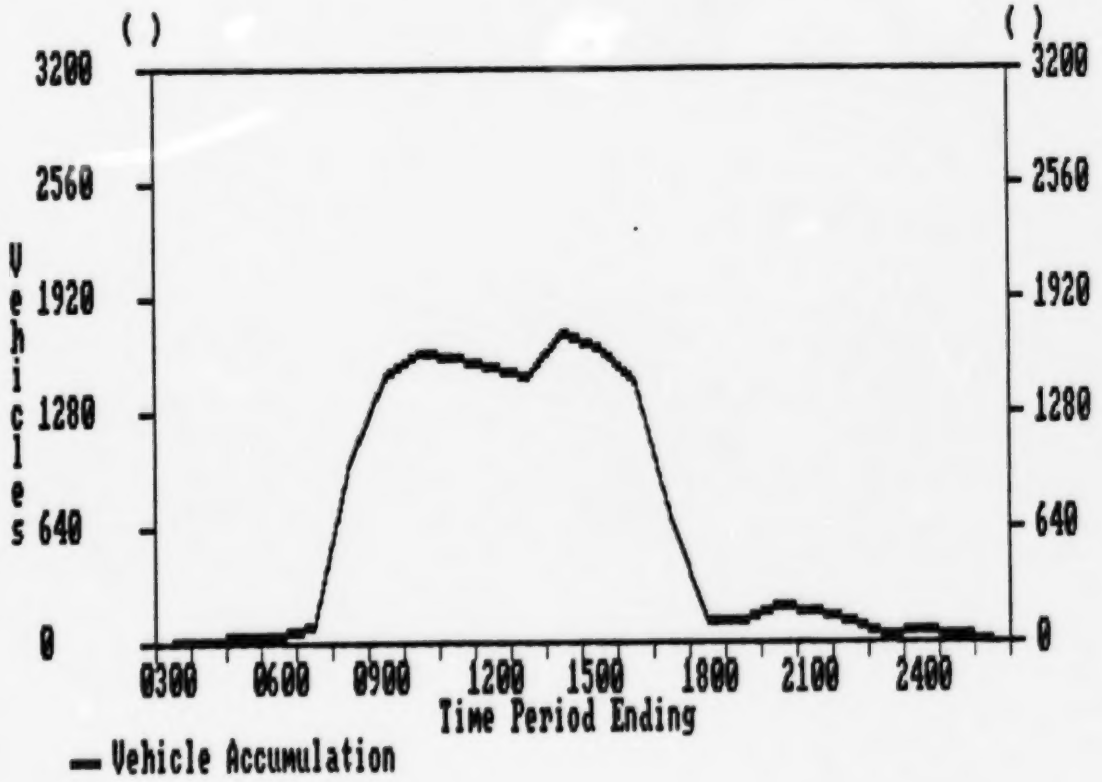

FIGURE 5
HOURLY VEHICLE ACCUMULATION

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The data indicated that vehicle speeds are typical of that expected based on the legal speed limit of 50 km/hr. The highest average speeds (43-44 km/hr) were observed on Lorne Street, Smith Street and 15 Avenue. On these streets approximately 12-14% of the traffic exceeded the legal speed limit. The lowest average speeds (36-39 km/hr) were observed on Cornwall Street, Rose Street and 14 Avenue. On these streets less than 5% of the traffic was exceeding the legal speed limit.

Traffic Safety

Figure 6 summarizes the history of reportable accidents for 1983. Briefly, the figure indicates that the highest frequency accident locations are as follows:

		No. of Accidents
1.	13th Avenue at Lorne Street	12
2.	14th Avenue at Hamilton Street	9
3.	13th Avenue at Hamilton Street	6

A review of historical accident records indicated that these three locations also experienced a relatively high accident rate prior to 1983. The majority of accidents were of the right angle type.

3.4 PEDESTRIAN MOVEMENTS

Short-term pedestrian counts were undertaken in the Transitional Area as part of this study.

Pedestrian movements and classifications were recorded at 14 intersection locations within the area for at least 2 hours - one morning hour and one afternoon hour. Some selected intersections were counted during the noon hour period. Pedestrians were classified into three basic categories with the overall distribution of pedestrians as follows:

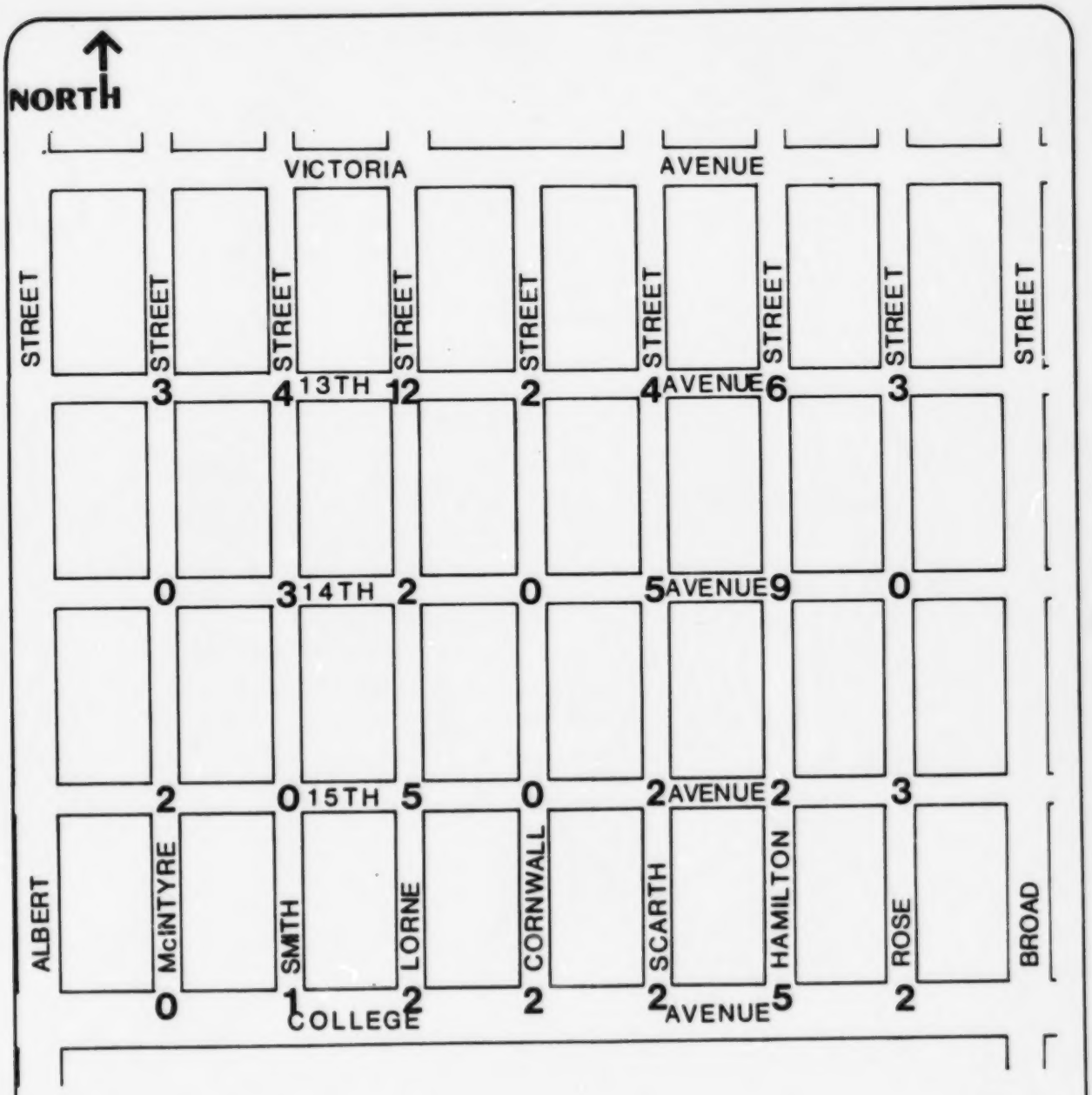

FIGURE 6
1983 ACCIDENT FREQUENCY
(to Dec. 8/83)

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1.	Adults	70%
2.	Children	20%
3.	Seniors	10%
	Total	**100%**

The following observations were made from the pedestrian count data.

1. Pedestrian flows were highest in the vicinity of 13th Avenue and were observed to be rather evenly distributed from east to west. The intersection of Scarth Street with 13 Avenue experienced one of the highest pedestrian volumes.

2. Generally, pedestrian activity tended to decrease from north to south in the Transitional Area.

   The intersection of Scarth Street and 15 Avenue was a major exception to this general trend as it experienced 2 hour pedestrian volumes of about 225 due to the proximity of the school.

3. The east-west distribution of pedestrian activity did not follow any definite trend.

4. Seniors were observed to be concentrated in the east part of the Transitional Area (i.e. east of Scarth Street).

5. As a result of the location of the school, children were observed to be concentrated in the south-east.

3.5 PARKING CONDITIONS

In reviewing parking conditions in the Transitional Area, the Regina Downtown Parking Study was used as a principal resource document. This report, completed in 1983, provides an inventory of existing parking supply and demand in the Transitional Area.

Parking Supply

Briefly, the Downtown Parking Study indicated the following:

1. A total of about 5960 parking spaces are available in the Transitional Area. Of this, about 1505 stalls (25%) consists of on-street parking while the remaining 4455 stalls (75%) are off-street.

2. Parking is distributed within the Transitional Area as follows based on the analysis sub-areas shown in Figure 7.

	On-Street			Off-Street		
	No.	%	Stalls/ Block	No.	%	Stalls/ Block
o Area A - North	333	22%	42	1691	38%	210
o Area B - South East	442	29%	49	1177	26%	130
o Area C - North Central	225	15%	45	696	16%	140
o Area D - South West	505	34%	51	891	20%	89
Total	**1505**	**100%**	**47**	**4455**	**100%**	**139**

From the above, it can be seen that on-street parking is rather evenly distributed throughout the area on a block basis with slightly higher densities of parking in the south. The north sector has a higher concentration of off-street parking while the southwest sector has the lowest.

3. On-street parking consists of primarily metered spaces in the north sector while non-metered 2-hour restricted parking predominates in the remainder of the Transitional Area.

4. Approximately 69% (3057 stalls) of the off-street parking in the Transitional Area consists of employee parking. This varies from a high of 82 percent (1389 stalls) in the north sector to a low of 46 percent (411 stalls) in the southwest sector. Approximately 25% of the off-street parking is for residential use with a high of 49% in the southwest and a low of 9% in

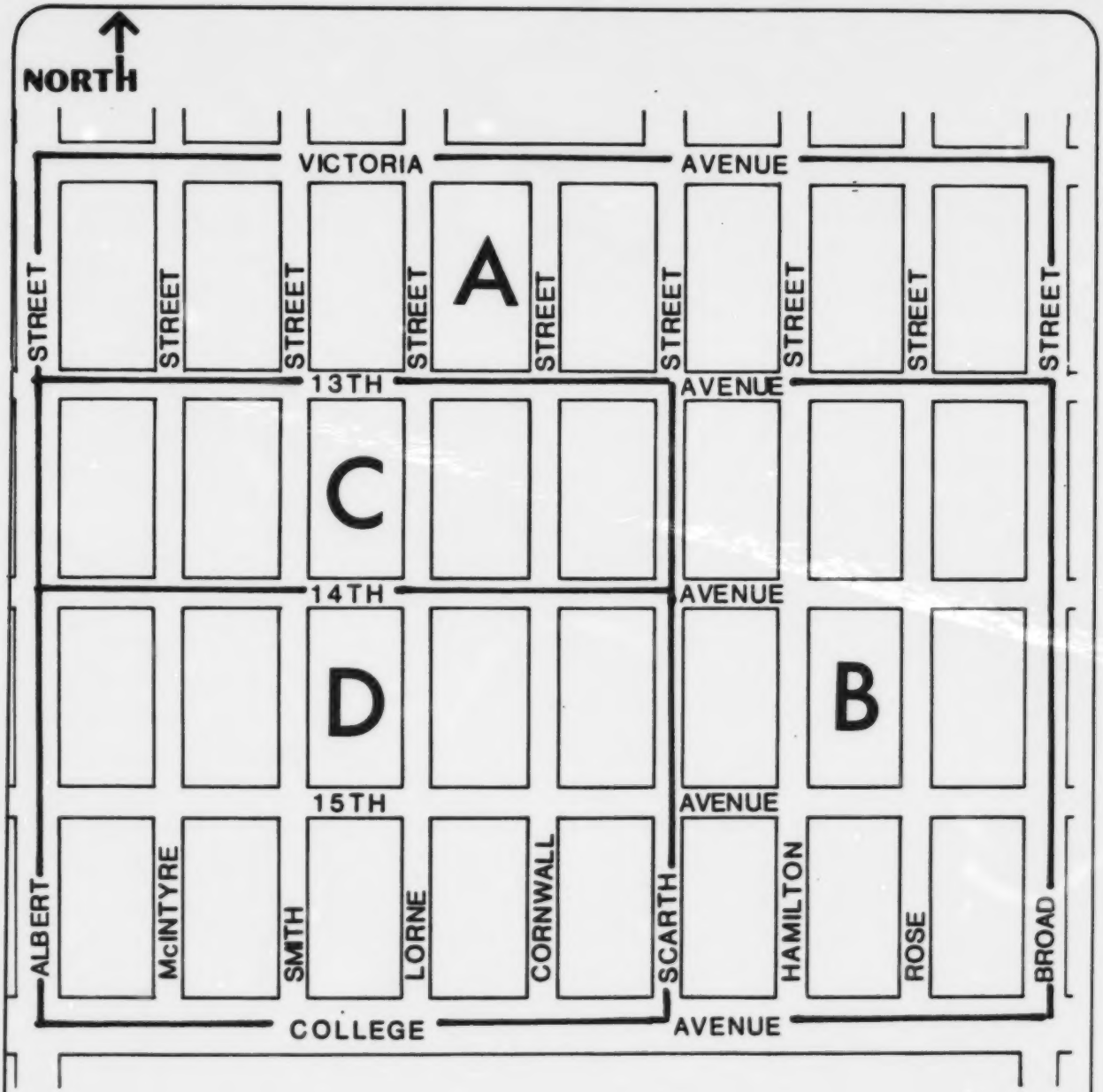

FIGURE 7
ANALYSIS SUB-AREAS

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the north. Public parking represents only about 6% of the total parking. The off-street parking summary is shown in Table 3.

Demand

An indication of parking demand characteristics in the Transitional Area was provided in the Downtown Parking Study although the study concentrated mainly in the north sector. The following observations were made:

- On-street parking demands represented a maximum of only 50% of the available supply overall in the Transitional Area based on a sample accumulation survey consisting of 10 block faces. Parking demands were markedly higher between 1000 hours and 1300 hours than for the remainder of the day. Some specific block faces however, did experience maximum accumulations close to their capacities.

- On-street parking duration for the same block faces indicated that approximately 88% of the vehicles were parked for less than 2 hours and 100% were parked for less than 3 hours -- an indication of short-term parking.

- Based upon a sample of both on-street and off-street parkers in the Transitional Area south of 13 Avenue, the combined parking demand overall was about 72% of the available supply.

- In the Transitional Area south of 13 Avenue, the parking usage was noted to exceed the parking demand for local users by 75-80%. This indicated the existance of spillover parking from the downtown. However, only the 3 blocks were observed to have the actual parking demand approach the supply. Only the block containing the CIS Building did not have a supply greater than the demand.

- North of 13 Avenue, the reverse pattern was evident as the demand exceeded the supply. However, parking usage was less than the demand

indicating that the parking supply is not meeting the needs of the users from the perspective of cost and time restrictions.

TABLE 3

SUMMARY OF OFF-STREET PARKING

Sub-area	Residential No.	%	Employee No.	%	Public No.	%	Total No.	%
A	150	9%	1389	82%	152	9%	1691	100%
B	352	30%	761	65%	64	5%	1177	100%
C	190	27%	496	72%	10	1%	696	100%
D	432	49%	411	46%	48	5%	891	100%
Total	**1124**	**25%**	**3057**	**69%**	**274**	**6%**	**4455**	**100%**

3.6 LOCAL PUBLIC OPINIONS AND CONCERNS

General

In an attempt to obtain specific input from residents and businessess located within the Transitional Area, a questionnaire was developed by the Steering Committee and distributed and collected by members of TACS. The questionnaire was designed to determine local resident and employment perceptions of traffic and parking conditions in the area as they are often quite different from those of engineering and planning professionals.

A total of 99 questionnaires were returned, 98 of which had identified locations within the Transitional Area. The questionnaires reflected the following distribution by respondent category:

			No.	Percent of Responses
1.	Resident	- Owner	14	14%
		Renter	61	62%
		Subtotal	**75**	**76%**
2.	Commercial		10	10%
3.	Commercial/Residential		9	9%
4.	Unknown		5	5%
		Total	**99**	**100%**

The questionnaires represented over 3.4% of the households and about 14% of the owner residents of the area. In evaluating the questionnaire response, the Transitional Area was subdivided into the same four analysis sub-areas shown in Figure 7 and described below:

1. Sub-area A - 8 blocks located north of 13th Avenue primarily characterized by office, retail and institutional uses;
2. Sub-area B - 9 blocks located in the south-east of the area south of 13th Avenue and east of Scarth Street;
3. Sub-area C - 5 blocks located between 13th Avenue and 14 Avenue west of Scarth Street;
4. Sub-area D - 10 blocks located south of 14th Avenue and west of Scarth Street characterized by primarily low rise residential uses.

The questionnaire returns indicated the following distribution of responses by sub-area:

TABLE 4
DISTRIBUTION OF QUESTIONNAIRE RESPONSES
BY SUB-AREA

Sub-Area	No. of Responses	Percent of Total	Response Rate/Block
A	4	4%	0.5
B	14	14%	1.6
C	9	9%	1.8
D	71	73%	7.1
Total	**98**	**100%**	**3.1**

Clearly, Sub-area D dominated the questionnaire returns (73%) possibly due to the interest shown by owners and renters of single family dwellings which frequent the area. Sub-area C was second in terms of the response rate. Tables 5, 6 and 7 summarize the questionnaire results.

Traffic and Pedestrian Circulation

Table 5 indicates that about 38% and 66% of respondents felt that there was a traffic and pedestrian problem respectively on their street. When asked if changes in traffic or pedestrian circulation would be supported, 38% indicated support while 40% indicated non-support. The remaining 22% did not respond to the question as their answer would likely depend upon the specific changes proposed. It would appear that of the 59 respondents that felt there was not a traffic problem on their street, 33% would be prepared to support changes depending upon what was proposed. This reflects what many of the questionnaires indicated. Many residents have accepted the status-quo as part of life near the downtown. However, if they felt changes would improve the traffic situation, they may support them.

Generally, respondents in the north and east indicated more concern with respect to traffic and more support for change although they represented less than 28% of the respondents. Pedestrian safety was of major concern throughout the area.

In evaluating the traffic question by respondent type, it is evident that renters and businesses were slightly less concerned with traffic and pedestrian circulation. Owners of residences in the area expressed more concern as 57% of these respondents felt there was a traffic problem. The porportion of respondents supporting a change did not differ by respondent type.

Table 6 shows the sub-area breakdown of responses to the questionnaire by respondent type.

Table 7 summarizes the frequency and type of traffic concerns expressed by respondents who felt there was a traffic or pedestrian concern and indicated the type of problem. Pedestrian concerns were most frequent while safety, speed, heavy traffic and bus traffic were also most common. Lighting and vibration were less frequent but common concerns. About 73% of the expressed specific traffic or pedestrian concerns, could be attributed to the volume of traffic activity while the remaining perceived problem categories were related to traffic control in the area.

Table 7 also summarizes the changes suggested. Those which could be classified as **major** represented 45% of the number of changes suggested but only 15% of the total respondents. **Minor** changes in signage, maintenance, enforcement, etc. represented 55% of the total changes suggested and 18% of the total respondents.

TABLE 5

SUMMARY OF QUESTIONNAIRE RESPONSES BY SUB-AREA AND BLOCK

Sub-Area	Block	Responses	Traffic Problem Yes	Traffic Problem No	Traffic Change Yes	Traffic Change No	Parking Problem Yes	Parking Problem No	Parking Change Yes	Parking Change No	Pedestrian Problem Yes	Pedestrian Problem No
A	367	1	1	0	1	0	1	0	1	0	1	0
	369	3	2	1	2	1	3	0	3	0	2	1
Sub-total		**4**	**3**	**1**	**3**	**1**	**4**	**0**	**4**	**0**	**3**	**1**
B	409	1	1	0	1	0	1	0	1	0	0	1
	410	1	1	0	1	0	1	0	1	0	0	1
	427	1	1	0	1	0	0	1	0	0	0	1
	463	11	2	9	1	6	7	4	4	5	8	2
Sub-total		**14**	**5**	**9**	**4**	**6**	**9**	**5**	**6**	**5**	**8**	**5**
C	404	3	0	3	0	3	1	2	1	0	3	0
	406	1	0	1	0	0	0	1	0	0	1	0
	407	2	1	1	1	0	1	1	1	0	1	1
	408	3	3	0	3	0	3	0	3	0	1	2
Sub-total		**9**	**4**	**5**	**4**	**3**	**5**	**4**	**5**	**0**	**6**	**3**
D	430	7	5	2	7	0	5	2	3	1	3	4
	431	13	6	7	5	4	7	6	5	3	9	4
	432	2	1	0	1	0	1	1	0	0	1	1
	433	5	3	2	2	2	2	3	2	2	3	2
	457	9	1	8	3	5	5	4	6	2	8	1
	458	7	1	6	0	5	3	4	2	4	4	1
	459	24	5	18	6	13	9	14	10	9	18	3
	460	4	3	1	2	1	4	0	4	0	2	2
Sub-total		**71**	**25**	**44**	**26**	**30**	**36**	**34**	**32**	**21**	**48**	**18**
Total		**98**	**37**	**59**	**37**	**40**	**54**	**43**	**47**	**26**	**65**	**27**

TABLE 6

SUMMARY OF QUESTIONNAIRE RESPONSE BY RESPONDENT TYPE

Sub-Area	Responses Type	Traffic Problem Yes	Traffic Problem No	Traffic Change Yes	Traffic Change No	Parking Problem Yes	Parking Problem No	Parking Change Yes	Parking Change No	No. of Responses
A	Residential Sub-total	3	0	3	0	3	0	3	0	3
	- owner	1	0	1	0	1	0	1	0	1
	- renter	2	0	2	0	2	0	2	0	2
	Commercial Sub-total	0	1	0	1	1	0	1	0	1
	- residential	0	0	0	0	0	0	0	0	0
	- commercial	0	1	0	1	1	0	1	0	1
Sub-total		**3**	**1**	**3**	**1**	**4**	**0**	**4**	**0**	**4**
B	Residential Sub-total	4	6	3	4	6	4	4	3	10
	- owner	0	0	0	0	0	0	0	0	0
	- renter	4	6	3	4	6	4	4	3	10
	Commercial Sub-total	1	3	1	2	3	1	2	2	4
	- residential	0	3	0	2	2	1	1	2	3
	- commercial	1	0	1	0	1	0	1	0	1
Sub-total		**5**	**9**	**4**	**6**	**9**	**5**	**6**	**5**	**14**
C	Residential Sub-total	3	4	3	2	4	3	4	0	7
	- owner	0	0	0	0	0	0	0	0	0
	- renter	3	4	3	2	4	3	4	0	7
	Commercial Sub-total	1	1	1	1	1	1	1	0	2
	- residential	0	0	0	0	0	0	0	0	0
	- commercial	1	1	1	1	1	1	1	0	2
Sub-total		**4**	**5**	**4**	**3**	**5**	**4**	**5**	**0**	**9**
D	Residential Sub-total	21	33	21	24	32	23	29	13	55
	- owner	7	6	6	6	9	4	7	2	13
	- renter	14	27	15	18	23	19	22	11	42
	Commercial Sub-total	3	9	5	4	3	9	3	6	12
	- residential	1	5	3	2	1	5	1	2	6
	- commercial	2	4	2	2	2	4	2	4	6
Sub-total		**24**	**42**	**26**	**28**	**35**	**32**	**32**	**19**	**67**
Total		**36**	**57**	**37**	**38**	**53**	**41**	**47**	**24**	**94**

TABLE 7

SUMMARY OF QUESTIONNAIRE RESPONSE BY PROBLEM AND SUGGESTED CHANGE CATEGORY

A. Traffic Problem	Responses	Percent
1. Traffic Volume		
- safety	17	29%
- noise	4	7%
- buses	9	15%
- speed	11	19%
- vibration	7	12%
- pedestrian	27	46%
- lighting	7	12%
- heavy traffic	10	17%
- no category	4	7%
- other	3	5%
Total Responses	**43**	**73%**
2. Traffic Control		
- signage	7	12%
- wrong way traffic	4	7%
- maintenance	5	8%
- other	2	3%
Total Responses	**16**	**27%**
Total Responses A1+A2	**59**	**100%**

B. Parking Problems	Responses	Percent
1. Supply		
- employee	15	21%
- no category	24	32%
Total Responses	**39**	**53%**
2. Parking Control		
- time restrictions	29	40%
- meters	3	4%
- others	2	3%
Total Responses	**34**	**47%**
Total Responses B1+B2	**73**	**100%**

C. Traffic Change	Responses	Percent
1. Major		
- through traffic	6	18%
- direction of flow	5	15%
- bus routes	6	18%
Total Responses	**15**	**45%**
2. Minor		
- signage	6	18%
- maintenance	5	15%
- enforcement	6	18%
- paintlines	5	15%
- other	3	9%
Total Responses	**18**	**55%**
Total Responses C1+C2	**33**	**100%**

D. Parking Change	Responses	Percent
- more parking	5	13%
- resident priority	18	45%
- increase time limit	3	8%
- angle parking	1	3%
- other	10	25%
- no category	4	10%
Total Responses	**40**	**100%**

Note: Total responses are different from the sum of item responses in many cases as some residents indicated more than one problem type while others did not specify the particular problem.

Parking

Approximately 55% of respondents felt that there was a parking problem in the area while 44% did not. When asked if they would support changes to parking, 48% indicated support, 27% indicated non-support and 25% were undecided. As with the traffic question, it appears that many of the respondents had accepted the parking situation by indicating that they did not feel there was a problem. However, it appears that many would support changes which they feel may improve the parking situation.

Owners of residential properties gave a clear indication of a parking concern (71%) and the need for changes (80%). However, owners only represented 14% of respondents. Renters of residential properties which represented 61% of total respondents, felt there was a parking problem (57%) and gave clear support for changes (70%). Commercial properties which represented 10% of respondents were split on the parking concern and the need for a change. Respondents of properties which were both residential and commercial combined did not feel parking was of major concern (67%).

Table 7 summarizes the types of parking problems identified by respondents. About 53% of those who felt there was a problem, indicated that parking supply was the reason. Time restrictions on parking was suggested as the major problem by 47% of respondents. Employee parking was identified as one of the most frequent problem categories. The most popular suggested change in parking was categorized under resident priority.

Specific Areas of Concern

A number of very specific observations were provided in the questionnaire responses. These are listed below:

1. Stop sign violations on 13 Avenue;
2. Accidents at 13th Avenue & Lorne Street;
3. Speed of traffic and buses and vibration on Lorne Street;

4. Visibility of stop sign and accident frequency at 14th Avenue & Scarth Street;
5. Wrong way traffic on McIntyre Street north of 15th Avenue from office parking lot;
6. Speed of traffic on 15th Avenue between Scarth and Lorne Streets;
7. Eastview bus on Lorne Street is appreciated;
8. Parking from funeral chapels on Cornwall Street;
9. Better lighting and tree pruning on Cornwall Street and Lorne at 2300 block;
10. Employee and Wascana Centre parking on 2300 Smith Street;
11. Employees of CIS and Credit Union parking on College and Rose Streets;
12. Speeding and traffic noise on College Avenue;
13. Accidents at Scarth and 14th Avenue due to stop sign violations;
14. Pedestrian crossings of Cornwall Street to meet Heritage Bus;
15. Speed of traffic on 14th Avenue;
16. Downtown employee parking on 14th Avenue;
17. Greyhound and STC bus traffic on Hamilton Street and 14th Avenue.

3.7 EVALUATION OF TRAFFIC AND PARKING CONDITIONS

The following section summarizes the principal conclusions of the analysis of traffic and parking conditions in the Transitional Area from a technical standpoint and the perspective of local businesses and residents. These conclusions have been based on the data presented previously in this section.

Traffic and Pedestrian Circulation

1. Traffic volumes on streets in the Transitional Area are higher than normally considered acceptable for low rise residential development, but considered acceptable for medium and high density residential. Traffic activity is most severe to the north of 14th Avenue.

2. Traffic activity in the area is high due in part, to the density of residential and commercial development in the area. However, it is estimated that as much as 60% of the daily traffic in the area is non-local traffic. This traffic is principally generated by the downtown area and is made up of traffic passing directly through the Transitional Area or parking within the Transitional Area. Much of the non-local traffic enters and exits the area north of 15th Avenue in order to reduce delays and obtain convenient access to developments in the downtown.

3. The majority of local residents and businesses are not directly concerned about traffic volumes, in the area as reflected by the low questionnaire response rate (i.e. 3%) and the questionnaire returns themselves (i.e. 38%). The questionnaire respondents did indicate a more definite indirect concern about traffic volumes by identifying pedestrian concerns (i.e. 66%).

4. Changes in traffic or pedestrian circulation are supported by only 38% of questionnaire respondents and are not supported by 41%. Additional support for changes among respondents could materialize to a maximum of 59% depending on the specific change proposed. The majority of respondents desired minor changes rather than major restrictions to traffic.

5. The major traffic related concerns expressed by respondents were related to pedestrian safety and traffic safety.

6. Traffic speeds in the Transitional Area reflect the legal speed limits. Speeding was mentioned directly as a major concern quite frequently by questionnaire respondents and indirectly in relation to pedestrian safety. It would appear in this case that although traffic speeds are reasonable based on the legal speed limit, the speed of traffic is perceived to be too high by residents and pedestrians.

7. The Downtown Transportation Study has been developed with the assumption that streets such as Hamilton, Rose, Smith and Lorne would be available to serve downtown traffic.

Parking

1. The supply of parking in the Transitional Area as a whole is more than sufficient to meet the demand with the exception of 2 or 3 specific problem areas.

2. Parking within the Transitional Area appears to be primarily short-term in nature.

3. Short-term spillover parking from the downtown is evident in the area.

4. Much of the parking congestion in the Transitional Area is attributed to employees of businesses in the area.

5. Parking was considered to be a major concern by over 55% of questionnaire respondents. The main concern appears to be one of convenience rather than one of supply.

SECTION 4

DEVELOPMENT OF THE RECOMMENDED PLAN

4.1 GOALS AND OBJECTIVES OF THE PLAN

A number of goals have guided the development of a traffic and circulation plan for the Transitional Area based on the study terms of reference and the Transitional Area Development Plan. These are listed below as follows:

1. To ensure that the volume and distribution of traffic in the Transitional Area is compatible with maintaining a viable residential neighborhood in the form envisioned in the Transitional Area Development Plan.

2. To provide an environment in the Transitional Area conducive to a safe and pleasant pedestrian circulation.

3. To integrate within the pedestrian walkway system of the Transitional Area, a pedestrian linkage between the Downtown and Wascana Centre which will compliment and enhance the unique character of the Area.

4. To more stringently regulate parking in the Transitional Area, especially parking related to non-residential uses.

In view of these goals, existing traffic conditions and land use distribution, future transportation and land use plans and expressed local public opinion from the questionnaire results, the following specific plan objectives were identified in order of priority:

1. The plan should attempt to improve pedestrian safety everywhere within the Transitional Area with specific emphasis in the north and east where land use densities and pedestrian activity is high.

2. The plan should attempt to make on-street parking more convenient and available for local residents firstly, and local businesses secondly.

3. The plan should attempt to reduce traffic speeds throughout the Transitional Area.

4. Traffic volumes should be reduced in the south-west where low-rise house form residential development exists and is expected to remain. Through traffic movements should not be permitted to increase substantially in the remainder of the Transitional Area.

5. Traffic improvements aimed at reducing through traffic should not be severely restrictive in terms of access or creating a major inconvenience to local traffic.

6. The pedestrian walkway system should be developed in the vicinity of Scarth Street and Cornwall Street due to the proximity of these streets to existing and future pedestrian activity areas and their relatively low traffic movement function.

4.2 FORMULATION OF ALTERNATIVE PLANS

A number of alternative traffic plan scenarios and parking strategies, which addressed the plan objectives, were developed to cover the range of potential implementation approaches likely to be effective based on experiences elsewhere.

Formulation of Alternative Traffic Plan Scenarios

Three alternative traffic plan scenarios were developed for evaluation based on the plan objectives. The common elements of the plans included the use of more restrictive traffic controls in the southwest part of the Transitional Area designed to reduce traffic volumes, and, in the north and east, less restrictive controls intended to improve pedestrian safety and reduce traffic speeds were considered. Intersection

chokers were common to all plan alternatives due to their potential advantages in reducing traffic speeds and increasing safety. A fourth alternative included the do-nothing alternative or, in other words, maintaining the existing situation.

Briefly, the four alternative traffic plan scenarios are described below. A further description and presentation of the alternatives is presented in Appendix A.

1. Scenario 1 - Restrictive High Cost Traffic Plan

This plan involved the creation of several dead end streets in the southwest through the use of road closures and the construction of cul-de-sacs on these streets. This plan would physically prevent non-local traffic from using streets in the southwest as through routes and reduce traffic volumes to about 100 - 300 vehicles per day on these streets. A collector system made up of portions of Lorne Street, 15th Avenue and McIntyre Street would provide the principal access routes to the southwest area with traffic volumes expected to be in the order of 500 -1000 vehicles per day. All roadways in the southwest would be converted to two-way operation.

In the north and east, intersection chokers were proposed to reduce the number of travel lanes and the amount of pavement for pedestrians to cross. Also, the chokers would enhance safety by making pedestrians and traffic control signs more visible at intersections.

The pedestrian mall was located on Scarth Street using full road closures in the south and boulevard widening alternatives in the north.

2. Scenario 2 - Restrictive Lower Cost Traffic Plan

This plan was similar in concept to Scenario 1 and was expected to be as effective in reducing traffic volumes and speeds. However, traffic restrictions in the southwest took the form of a maze of alternating or opposing one-way streets designed to reduce through traffic. The more extensive use of one-way

streets rather than street closures or cul-de-sacs would make this a lower cost alternative to Scenario 1.

In the north and east, this plan was very similar to Scenario 1 with the use of intersection chokers. The pedestrian mall in Scenario 2 was located on Cornwall Street.

3. Scenario 3 - Moderate Traffic Plan

This plan proposed the use of traffic controls which did not necessarily prevent through traffic from entering the Transitional Area but simply attempted to discourage it while achieving a reduction in traffic speeds.

A mixture of moderate traffic controls such as raised crosswalks, street humps and various boulevard widening alternatives designed to eliminate the visual continuity of the roadway and reduce pavement width were used.

In the north and east, 13th Avenue and 14th Avenue were shown as two-way streets. Intersection chokers were included throughout the area. The pedestrian mall was located on Scarth Street and limited traffic circulation was permitted in both directions on this street.

4. Scenario 4 - Do-Nothing Traffic Plan

This plan suggested that the existing traffic circulation pattern and traffic control methods be maintained. The only improvements would involve minor modifications to traffic control signs in the area.

All plans could be complemented with various on-street parking arrangements shown in Figure 8.

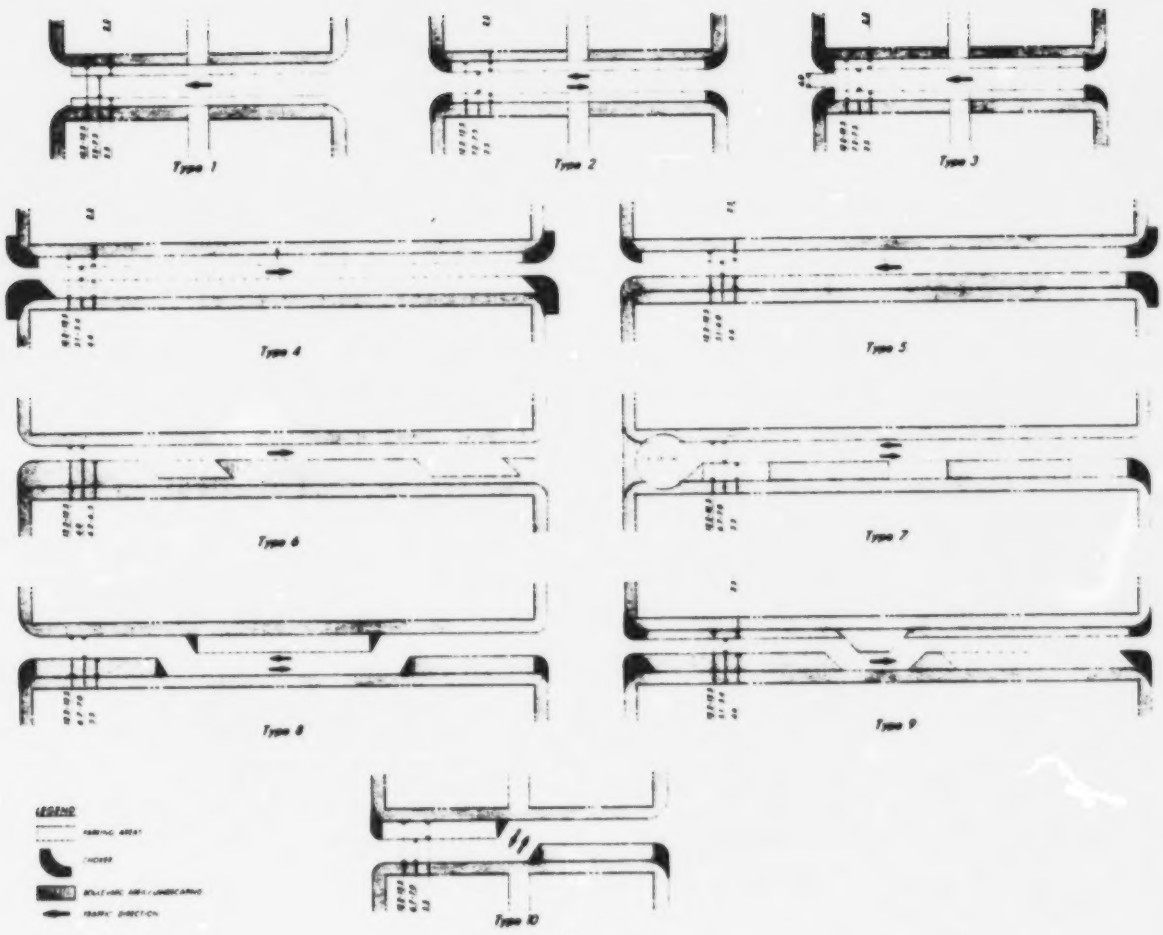

FIGURE 8
ALTERNATIVE STREET IMPROVEMENT LAYOUTS

Formulation of Alternative Parking Strategies

Four parking strategies were developed for evaluation based on the plan objectives. Maintaining the existing 2-hour parking restrictions which currently help to discourage long term employee parking is common to all alternatives. The four strategies are presented below:

1. Strategy 1 - Introduce Further Parking Restrictions

   This strategy was intended to make parking more available and convenient for short-term residential use by further discouraging employee use of on-street parking. This would be undertaken by maintaining the present 2-hour parking restrictions and, in key problem areas, installing parking meters and/or introducing one hour parking limits. The meters would aid enforcement and generate revenue.

2. Strategy 2 - Increase Parking Supply

   This strategy involved measures to increase on-street parking through the conversion of parallel curb parking to angle or 90° parking as shown in Figure 8. In addition, an increased off-street parking supply would be developed through the provision of adequate parking associated with new development.

3. Strategy 3 - Residential Parking Permit System

   This strategy would involve the implementation of a residential parking permit system. Residents would obtain a parking sticker from the City after showing proof of residence and vehicle ownership on a annual or semi-annual basis. A portion of each street or block would be signed for residential permit parking only to ensure resident parking is convenient and to aid in enforcement. Other areas would retain the 2 hour parking limit except for residents with parking permits.

4. Strategy 4 - Do-Nothing

This strategy would simply involve retaining the existing parking controls and patterns.

A further description of the four parking strategies is presented in Appendix A.

4.3 EVALUATION OF ALTERNATIVE PLANS

An evaluation of the alternative traffic plan scenarios and parking strategies was undertaken in two parts. This includes a resident evaluation and a technical evaluation.

Resident Evaluation

The various traffic plan scenarios and parking strategies were presented to area residents at an open house presentation organized by TACS and held on January 29, 1984. The open house was attended by about 25 people, most of whom were residents of the Transitional Area. The various plan scenarios and parking strategies were presented and representatives of the City of Regina and Stanley Associates Engineering Ltd. were available to answer questions and offer further explanation.

Residents and property owners who attended the meeting were asked to complete a questionnaire designed to help evaluate the various traffic plans and parking scenarios. The results of the questionnaire returns are presented in Table 8 and are summarized below:

1. Sixteen questionnaire responses were received. Of this, it was determined that at least 3 responses were from people not resident within the area. Only the 13 local responses were analyzed further.

2. There was no preference given towards the use of either one-way or two-way streets.

3. Scarth Street was preferred as the location of a pedestrian mall.

4. Traffic control and circulation and the configuration of the pedestrian link shown in Scenario 3 was given the highest preference while the do-nothing alternative was given the lowest preference.

5. The range of alternative parking arrangements shown for Scenario 1 was preferred.

6. The residential parking permit system was preferred over the other parking strategies.

In general, attendance at the open house presentation and the number of questionnaires returned was low. A significantly higher number of questionnaire responses from local residents and property owners would be required in order to infer local support for any of the plans proposed.

Technical Evaluation

An evaluation of the alternative traffic plan scenarios was undertaken based on their effectiveness in meeting the desired objectives of the plan. Other relevant evaluation criteria such as cost, acceptability, restrictions on local access, disruptions to transit patterns, reduced flexibility in the downtown transportation system, maintenance difficulties and enforcement difficulties were also considered.

The evaluation is summarized in Table 9. The table indicates that although Scenario 1 would be most effective in meeting the plan objectives, when other relevant criteria such as cost, acceptability, flexibility, etc. are considered. Scenario 3 appears to provide the best overall results. This plan appears to be the most practical and flexible alternative and the one most likely to gain public acceptance.

Table 10 summarizes an evaluation of parking strategies. Clearly, Strategy 3 shows the most beneficial results with respect to the evaluation criteria.

TABLE 8

SUMMARY OF OPEN HOUSE QUESTIONNAIRE

1. Attendance - 25.

2. Questionnaire Responses - 16

- Resident or Property Owner	13
- Outsider	3

3. Preference for Traffic Circulation

- one-way street	5
- two-way street	4
- no preference	4
Total Responses	13

4. Preference for Location of the Pedestrian Mall

- Scarth Street	9
- Cornwall	2
- Other	2
Total Responses	13

5. Average Ranking of Traffic Plan Scenarios

Plan Component	Scenario 1 Restrictive High Cost	Scenario 2 Restrictive Lower Cost	Scenario 3 Moderate	Scenario 4 Do-Nothing
Traffic Control and Circulation	2.4	2.4	1.75	3.5
Parking Arrangements	1.7	2.0	2.7	3.6
Configuration of Pedestrian Link	2.14	2.4	2.0	3.6
Overall Ranking	2.1	2.1	2.1	3.6

6. Average Ranking of Alternate Parking Strategies

Strategy	Description	Rank
Parking Strategy 1	- Introduce Further Restrictions	2.2
Parking Strategy 2	- Increase Parking Supply	2.2
Parking Strategy 3	- Residential Parking Sticker System	1.67
Parking Strategy 4	- Do-Nothing	3.33

Note: Respondents were asked to provide a ranking of alternatives from "1" to "4" where "1" was most preferred and "4" was least preferred. The above results represent the average rankings - the lower average values representing the alternative with highest preference by local property owners and residents.

TABLE 9

EVALUATION OF ALTERNATIVE TRAFFIC PLAN SCENARIOS

EVALUATION CRITERIA	RELATIVE TRAFFIC PLAN RATINGS Scenario 1	Scenario 2	Scenario 3	Scenario 4
A. EFFECTIVENESS IN MEETING PLAN OBJECTIVES				
Reduce Traffic Volumes	●	●	◑	○
Improve Pedestrian Safety	●	●	●	○
Reduce Traffic Speeds	●	●	●	○
Increase Parking Supply	●	●	●	○
B. OTHER RELEVANT CRITERIA				
Low Cost	○	◉	◉	●
Acceptability	◉	◉	◑	◉
Ease of Local Access	○	◉	◑	◑
Little Disruption to Transit	○	○	◑	●
Maintain Flexibility in Downtown Transportation System	○	◑	◑	●
Maintain Ease and Frequency of Maintenance	○	○	◉	●
Minimal Enforcement Required	◑	○	◑	◑

NOTE:

● denotes excellent ranking with respect to the evaluation criteria.

◑ denotes good ranking with respect to the evaluation criteria.

◉ denotes poor ranking with respect to the evaluation criteria.

○ denotes worst ranking with respect to the evaluation criteria.

TABLE 10

EVALUATION OF ALTERNATIVE PARKING STRATEGIES

EVALUATION CRITERIA	RELATIVE RATING Strategy 1	Strategy 2	Strategy 3	Strategy 4
1. Resident Priority	○	○	●	○
2. Parking Availability	◑	◑	●	○
3. Resident Convenience	○	◉	●	○
4. Ease of Enforcement	◑	○	◉	○
5. Implementation Cost	◑[1]	◉	◑[2]	●

1 Revenue from meters to off-set cost.
2 Revenue from parking permits to off-set cost.

NOTE:
- ● denotes excellent ranking with respect to the evaluation criteria.
- ◑ denotes good ranking with respect to the evaluation criteria.
- ◉ denotes poor ranking with respect to the evaluation criteria.
- ○ denotes worst ranking with respect to the evaluation criteria.

4.4 RECOMMENDED PARKING AND CIRCULATION PLAN

The traffic circulation plan depicted in Scenario 3 and presented in Figure 9 is recommended for the Transitional Area. The specific location of traffic control features shown in Scenario 3 is not, however, as important as the type of traffic controls used. The rationale for the selection of this plan was summarized previously in Tables 9 and 10. A combination of the parking controls described in Strategies 1, 2 and 3 is recommended for implementation.

Recommended Traffic Controls

The recommended traffic plan includes the following types of traffic controls.

1. **Intersection Chokers** - These devices should be implemented through the Transitional Area particularly at entrances to the area and in the north and east where traffic volumes and pedestrian activity is high. It is expected that the chokers will enhance safety as they will enable pedestians to be more visible to traffic as they approach the intersection. They will also provide a more visible location for traffic control signs and will control the proximity of on-street parking to the intersection. Their implementation will likely be readily accepted by residents and non-residents alike and they can be designed to be quite attractive as shown in Figure 10.

2. **Staggered Roadways** - This can be accomplished with staggered clusters of parking or boulevard widening as presented in Figure 8. The technique is intended to slow traffic by eliminating the visual and physical continuity of the travelway. The slowing of traffic and disruptions caused by angle or 90^{o} parking will increase travel times and tend to discourage through traffic. Figure 11 illustrates some examples of the treatment of staggered roadways.

3. **Street Humps or Raised Crosswalks** - These devices designed as undulations in the pavement with a width of 3.75 m and a maximum height of 10-15 cm are intended to reduce traffic speeds. Their effectiveness is well documented in

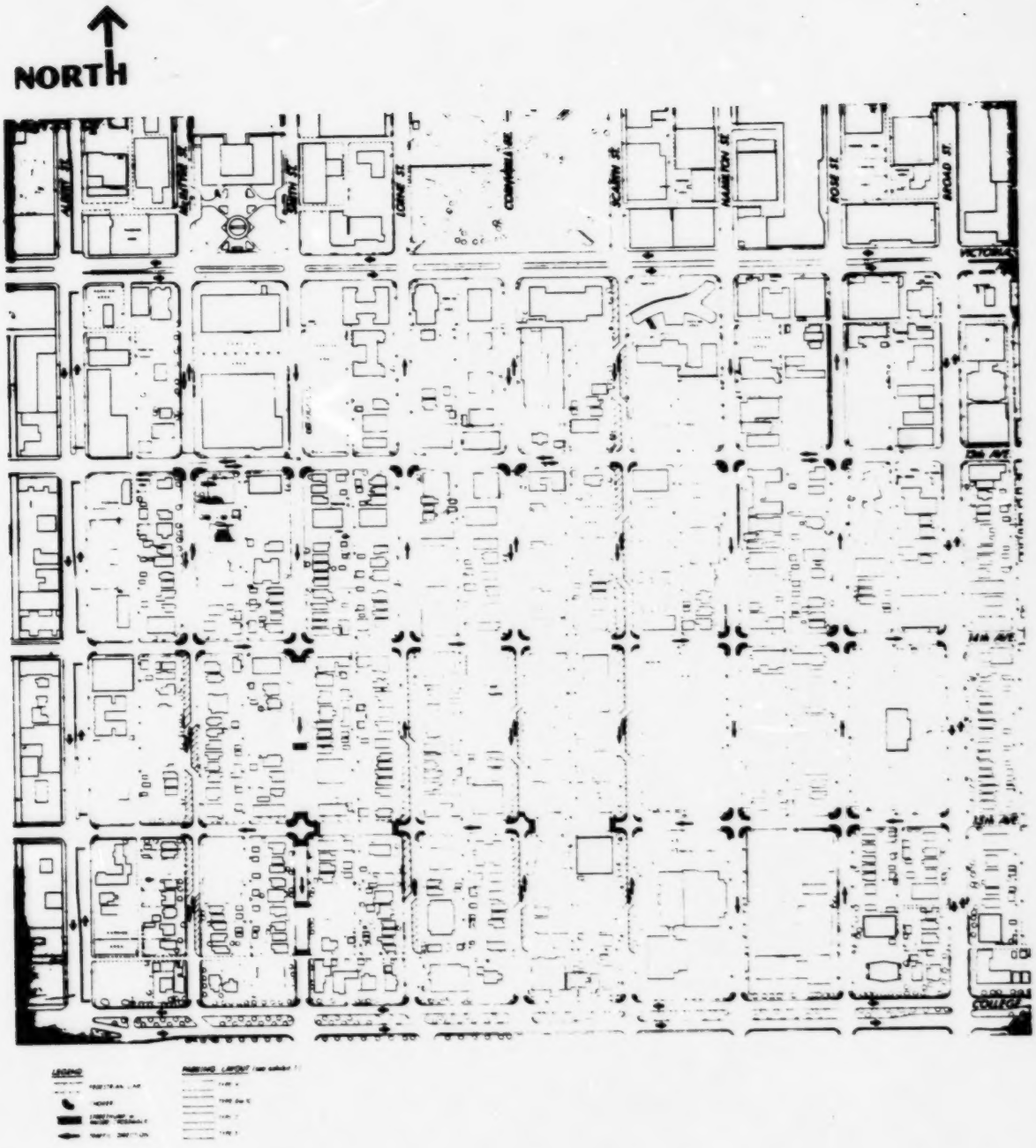

FIGURE 9
RECOMMENDED PLAN
(concept only)

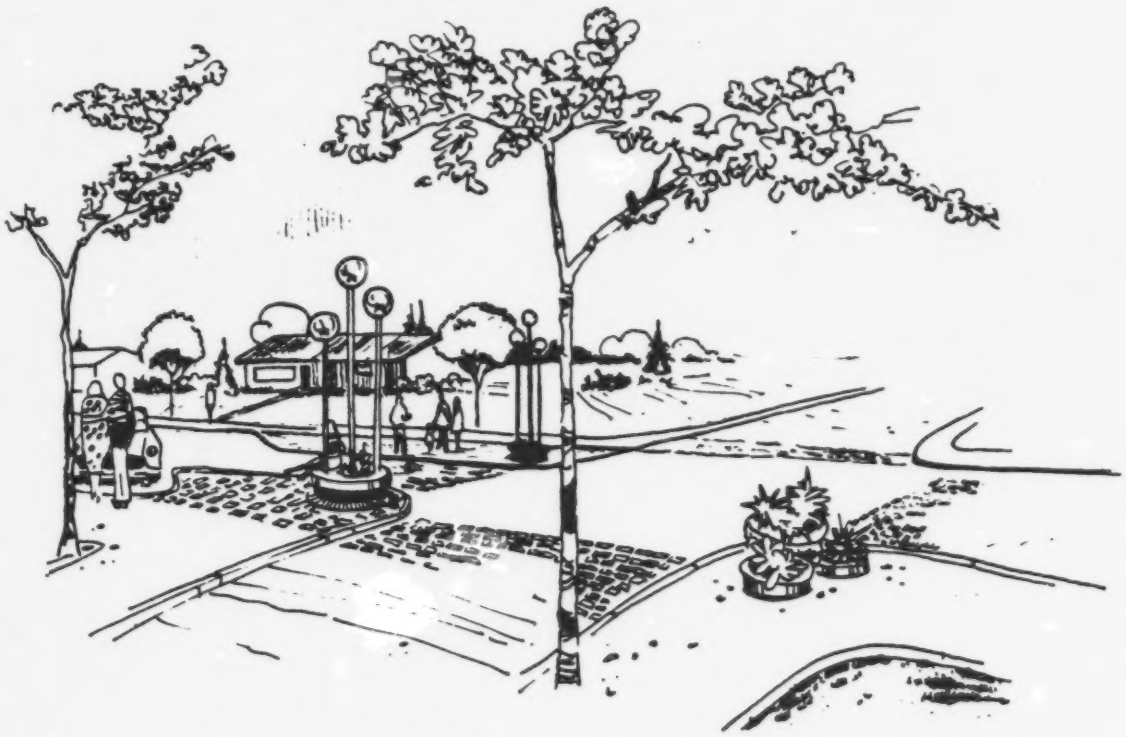

FIGURE 10
EXAMPLE OF
INTERSECTION DESIGN

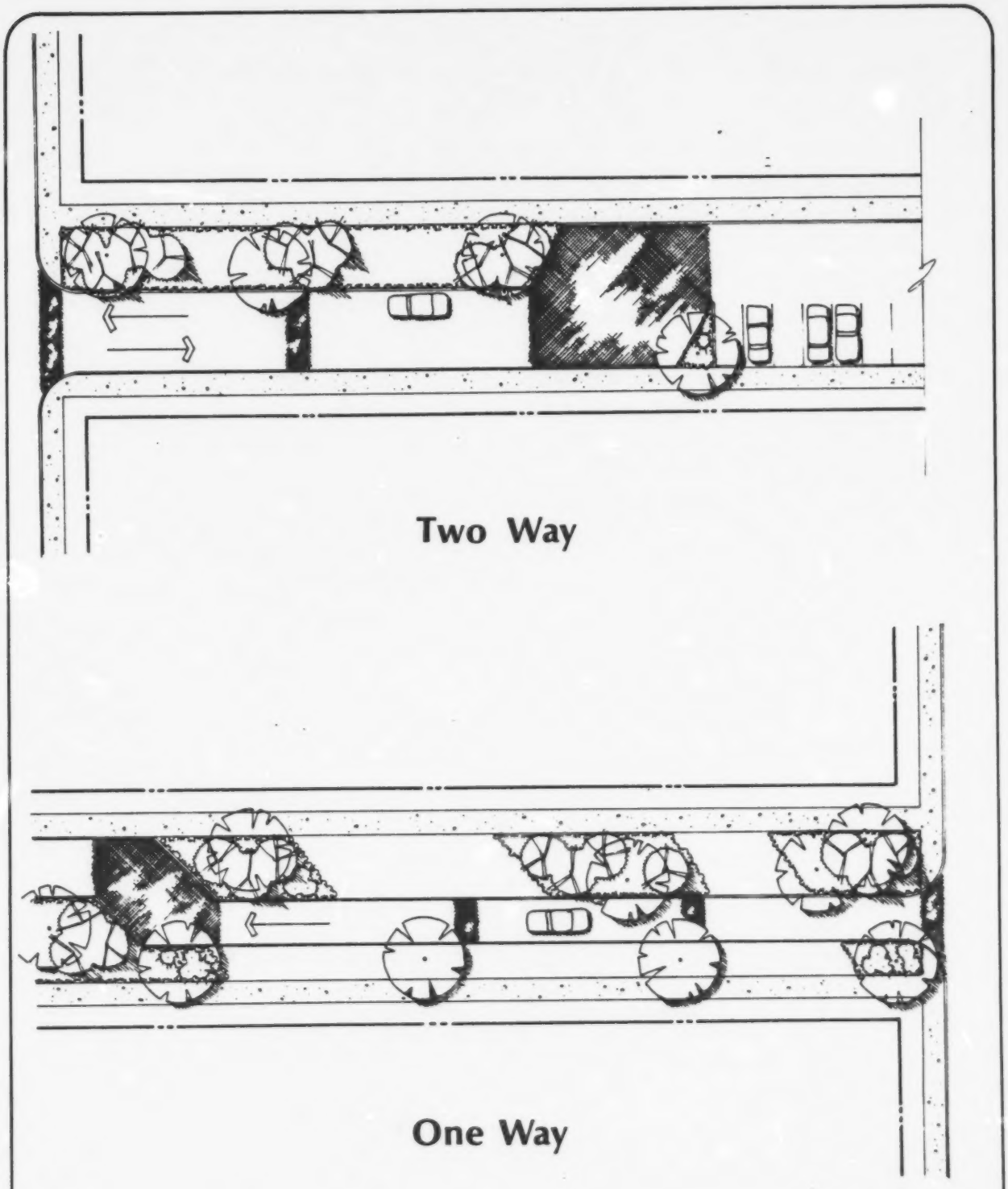

FIGURE 11
TREATMENT OF
STAGGERED ROADWAYS

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reducing vehicle speeds and in discouraging through traffic. Raised crosswalks can be designed using tiles or special pavers for greater delineation. Examples of raised crosswalks and street humps are shown in Figure 12.

4. **Two-Way Traffic** - Introducing two-way traffic on various streets can reduce traffic speeds and improve local access. Two-way streets are less efficient than the existing one-way operation and this lack of efficiency can introduce traffic delays and also discourage through traffic.

The specific types of controls used on specific streets and/or blocks should closely reflect the desires and needs of area residents.

Pedestrian Mall

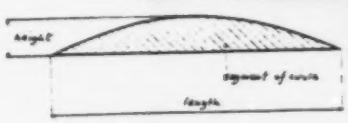
The pedestrian mall can be designed with a common surface for both pedestrians and vehicles. It is preferrable in this case that a special surface (i.e. pavers) be used and several obstacles to reduce the speed of traffic and to give drivers the visual impression of a pedestrian area be included in the design.

Recommended Parking Controls

The implementation of a resident parking permit system is key to resolving the major concerns of area residents. The specific format of the system must be resolved at the implementation stage to ensure that non-residents are screened from obtaining permits and that residents of apartment buildings do not vacate available off-street parking for less expensive on-street parking.

Additional on-street parking supply, further restrictions to parking and the resident permit program should be implemented on a block-by-block basis as required.

Raised Crosswalk



Speed Hump

FIGURE 12

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4.5 IMPLEMENTATION

In implementing the recommended plan, it should be realized that there will be differences of opinion and acceptance regarding the traffic improvements. A street or block group within the neighbourhood may have specific desires or concerns which differ from those of other streets or blocks.

The moderate nature of the recommended traffic plan offers the advantage that it can be implemented on a block-by-block basis and hence, more closely approximate the particular needs and desires of block groups. Conversely, a more restrictive traffic plan would require that a specific improvement on one-street impact upon the location and type of improvement on adjacent streets.

Resident Input

Experience suggests that resident input is a very critical element in the design and implementation process. The procedure used in this study has incorporated public input in problem identification and evaluation of alternative plans. However, the proportion of residents who participated in the study was low.

The study has recommended a specific framework for traffic and parking improvements in terms of the types and general locations of traffic controls. Within this framework, considerable flexibility remains for the selection of traffic controls, parking arrangements and two-way or one-way traffic circulation. It is recommended that the City of Regina establish workshops with interested block groups with the objective of finalizing a specific plan for the block within the framework of the recommended plan. Block groups who do not express an interest need not necessarily have improvements implemented.

The institution of a parking permit system can be implemented on a block-by-block basis as well, thereby giving residents the option not to participate. The implementation of a permit system on any street block may be dependent upon obtaining support from a specified percentage of residents (i.e. 60% - 70%).

Experimentation

It is recommended that the initial implementation of traffic improvements be undertaken on an experimental basis, as there is a lack of experience with the basic philosophy and acceptability of neighbourhood traffic management in the City of Regina.

Intersection chokers and staggered roadways can be constructed inexpensively with portable concrete or wood barriers. Street humps and raised crosswalks can also be implemented experimentally on one street prior to more widely spread implementation. Proper advertising and signage is also important to ease implementation and public acceptance.

If experimentation is chosen, an evaluation of the effectiveness of the traffic controls is necessary. It is recommended that the experimentation period be about 6 months in duration. A technical evaluation should be undertaken using the base traffic data included in this report. Area residents should also provide input into the evaluation process.

APPENDIX A
PRESENTATION OF ALTERNATIVE TRAFFIC PLAN SCENARIOS AND PARKING STRATEGIES

SCENARIO 1

RESTRICTIVE - HIGH COST TRAFFIC PLAN

A. PLAN FEATURES

- no change in traffic direction between 14th Avenue and Victoria Avenue and between Hamilton Street and Broad Street except on 15th Avenue and McIntyre Street
- cul-de-sacs are created on streets west of Scarth and south of 14th Avenue and these streets permit traffic flow in both directions
- principal access routes to the southwest area include Lorne Street, 15th Avenue and McIntyre Street
- intersection chokers are located throughout
- a pedestrian mall is located on Scarth Street utilizing full road closures and boulevard widening alternatives
- various parking arrangements can be included as indicated on Exhibit 1

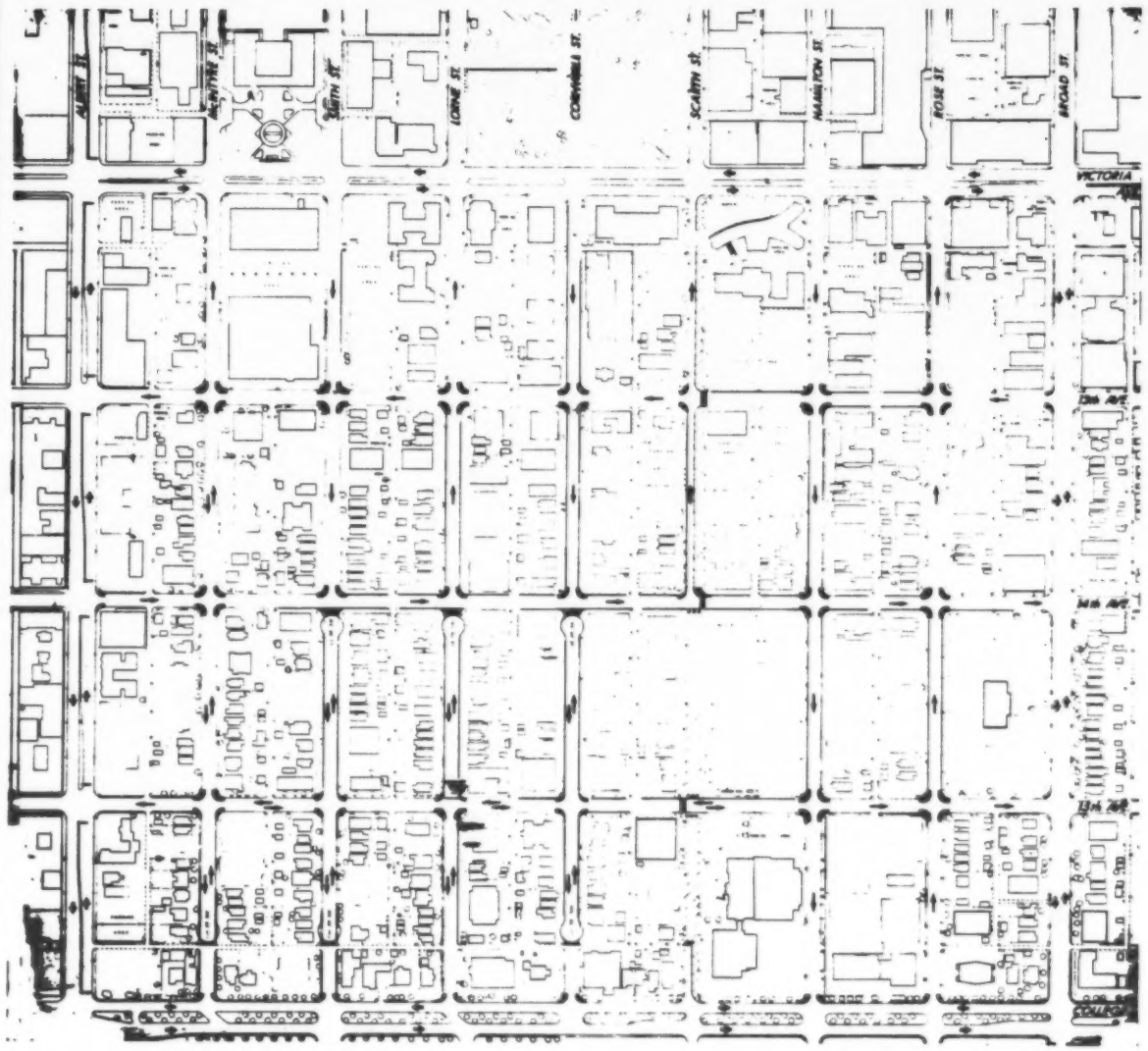
B. SOME ADVANTAGES OF THE PLAN

- will effectively reduce non-local traffic particularly in the southwest part of the Transitional Area
- chokers will improve pedestrian safety and traffic safety
- on-street parking supply can be increased with changes in parking arrangement

C. SOME DISADVANTAGES OF THE PLAN

- high cost
- major change in traffic patterns
- limited access for local residents and businesses
- will require revisions to transit patterns or special transit provisions
- may cause confusion for non-local traffic
- cul-de-sac construction may require removal of trees
- street maintenance would be more difficult and less frequent on cul-de-sacs

NORTH



SCENARIO 1

RESTRICTIVE-HIGH COST

TRAFFIC PLAN

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SCENARIO 2

RESTRICTIVE - LOWER COST TRAFFIC PLAN

A. PLAN FEATURES

- no change in traffic direction between 14th Avenue and Victoria Avenue and between Hamilton Street and Broad Street except on 15th Avenue and McIntyre Street
- a maze of alternating one-way streets is used to restrict through traffic west of Hamilton Street and south of 14th Avenue - some streets are terminated with cul-de-sacs
- principal access routes to the southwest area include Lorne Street, McIntyre Street and 15th Avenue
- intersection chokers are located throughout
- pedestrian mall is located on Cornwall Street using full road closures and boulevard widening alternatives
- various parking arrangements can be included as shown on Exhibit 1
- portions of Lorne Street, McIntyre Street, Cornwall Street, Scarth Street and 15th Avenue permit two-way traffic

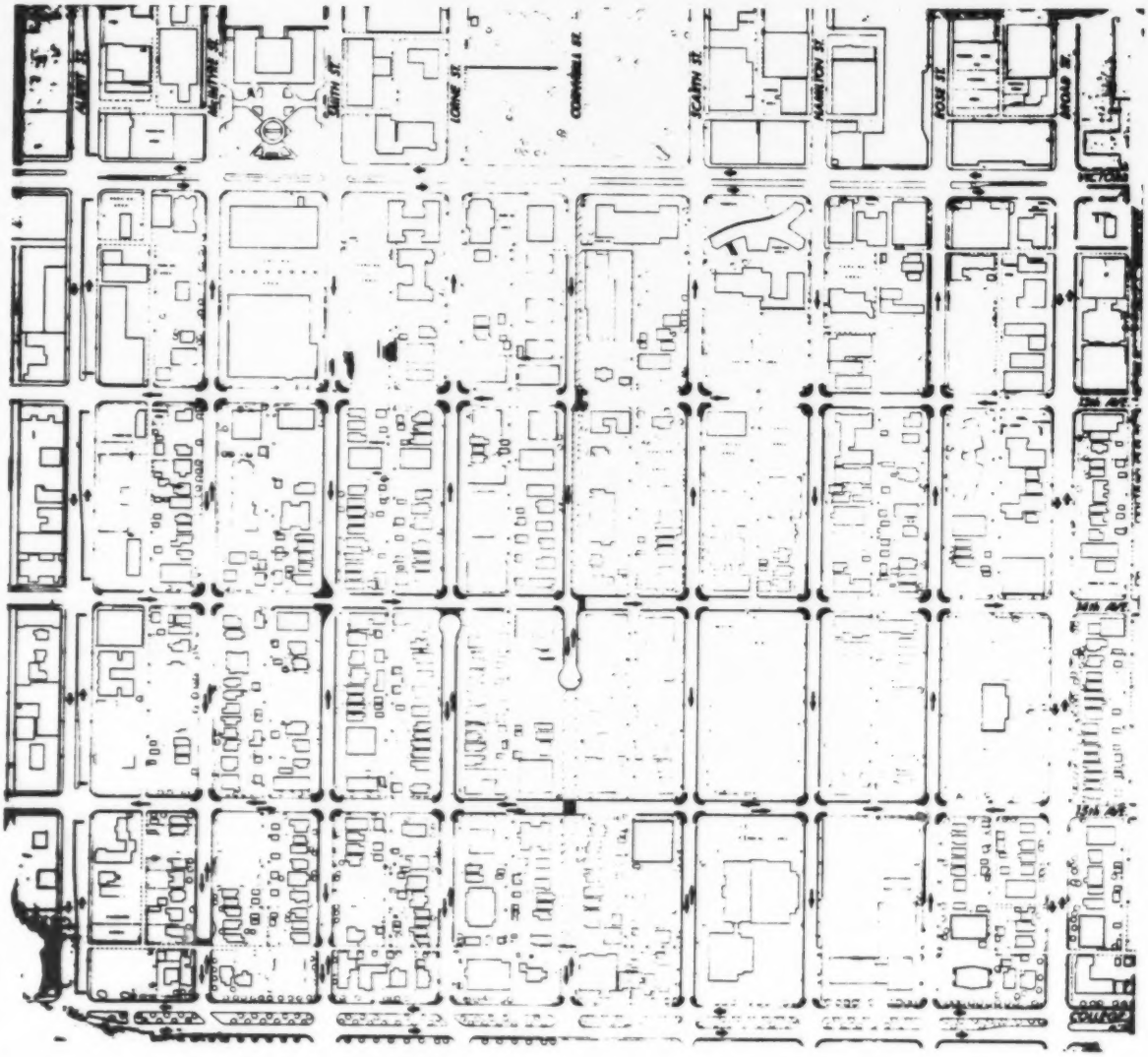
B. SOME ADVANTAGES OF THE PLAN

- will effectively reduce non-local traffic particularly in the southwest part of the Transitional Area
- chokers will improve pedestrian safety and traffic safety
- on-street parking supply can be increased with changes in parking arrangement
- lower capital cost and easier to implement and modify than Scenario 1

C. SOME DISADVANTAGES OF THE PLAN

- costly to implement
- major change in traffic patterns
- limited access for local residents and businesses
- will require revisions to transit patterns or special transit provisions
- will cause some confusion and driver frustration
- will require increased enforcement of one-way streets
- street maintenance will be more difficult

NORTH



SCENARIO 2

RESTRICTIVE - LOWER COST

TRAFFIC PLAN

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SCENARIO 3

MODERATE TRAFFIC PLAN

A. PLAN FEATURES

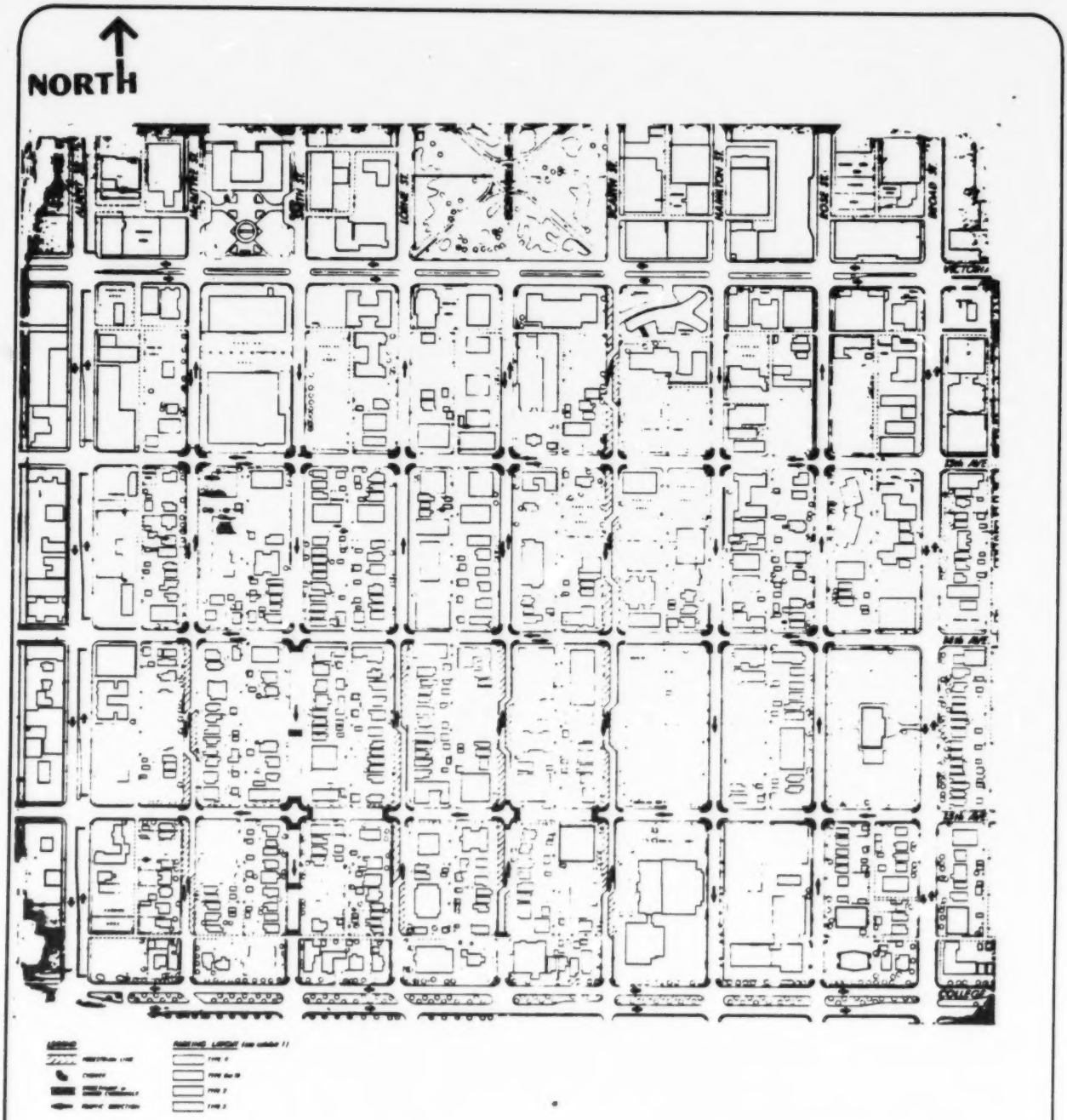
- abrupt changes in the alignment of roadways south of 14th Avenue and west of Hamilton Street
- various parking and/or boulevard widening alternatives can be used to create changes in alignment
- raised intersections and street humps are located on selected streets
- the direction of traffic flow can be changed to two-way operation or can remain one-way
- intersection chokers are located throughout
- a pedestrian mall is located on Scarth Street using clustered parking and boulevard widening alternatives with the integration of pedestrians with traffic on a common surface
- various parking arrangements can be included as indicated on Exhibit 1

B. SOME ADVANTAGES OF THE PLAN

- no major disruption to traffic patterns and access
- traffic safety and pedestrian safety will be improved
- traffic speeds will be reduced
- can be implemented at lower costs than Scenarios 1 and 2
- on street parking supply can be increased with changes in parking arrangement
- should discourage through traffic

C. SOME DISADVANTAGES OF THE PLAN

- will not eliminate through traffic
- costly to implement
- street maintenance will be more difficult



SCENARIO 3

MODERATE

TRAFFIC PLAN

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SCENARIO 4

DO - NOTHING TRAFFIC PLAN

A. PLAN FEATURES

- no change in traffic patterns or direction
- minor signing and pavement marking changes

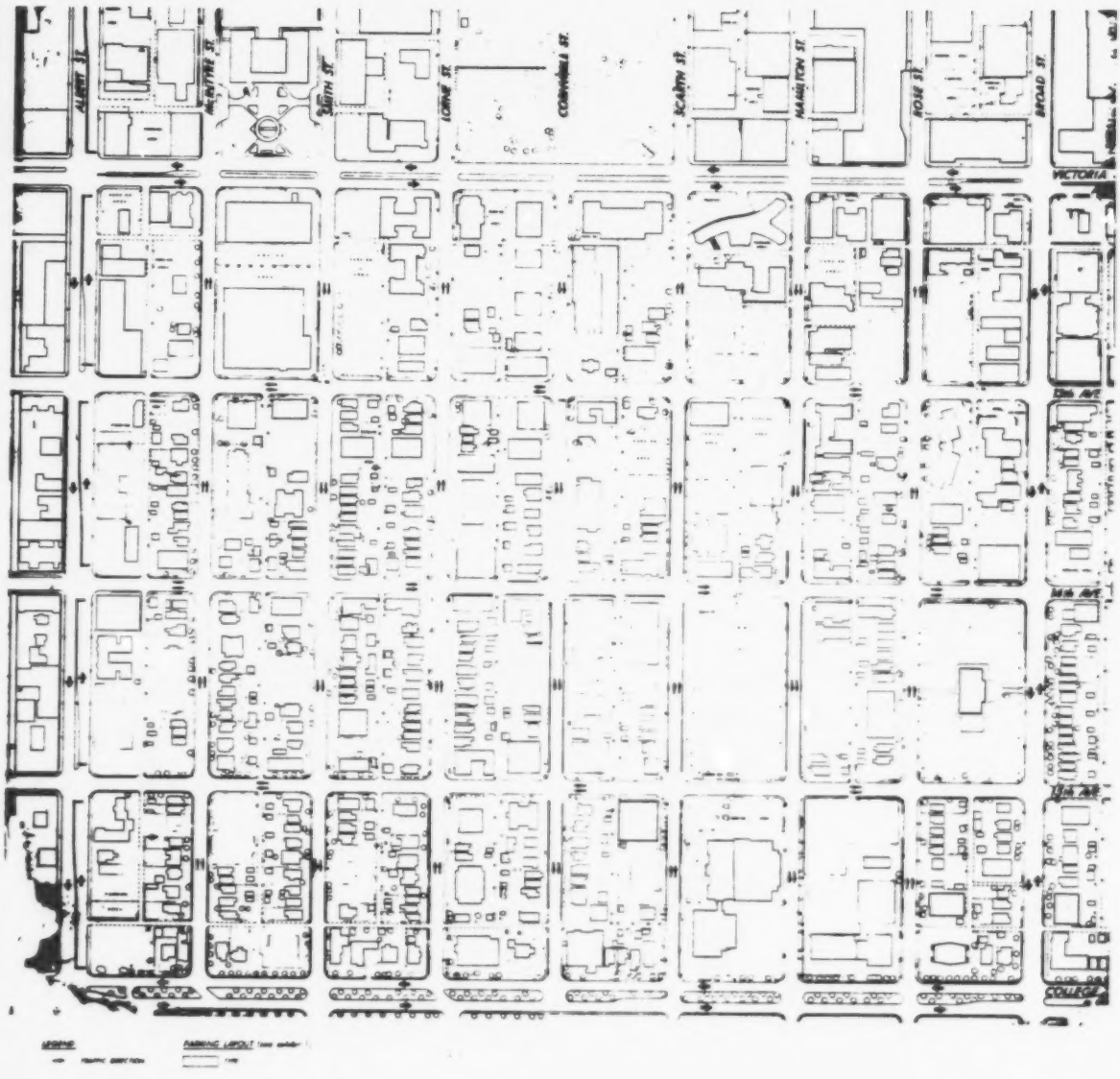
B. SOME ADVANTAGES OF THE PLAN

- very low cost
- no disruption to existing traffic patterns or access

C. SOME DISADVANTAGES OF THE PLAN

- no improvement in traffic conditions and pedestrian safety
- traffic volumes will increase further in future
- traffic volumes and speeds will not be compatible with the existing and planned residential character of the area

NORTH



SCENARIO 4

DO-NOTHING
TRAFFIC PLAN

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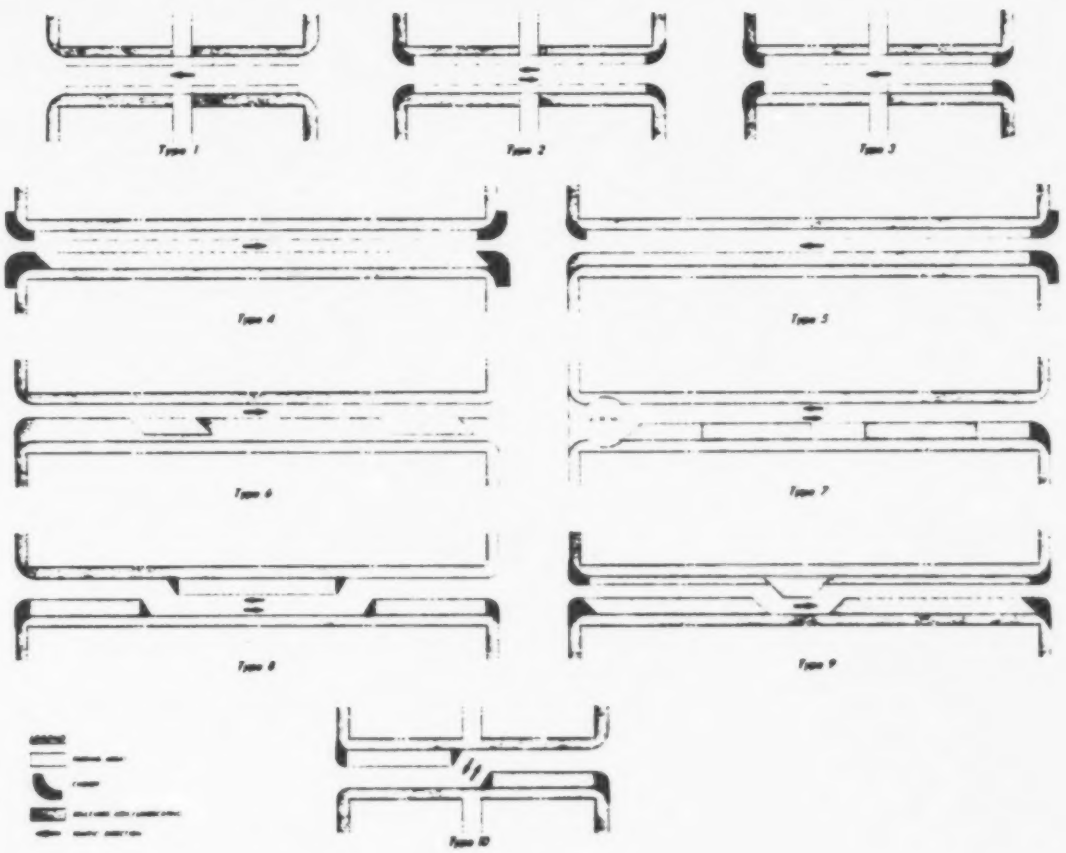

EXHIBIT 1
ALTERNATIVE STREET IMPROVEMENT LAYOUTS

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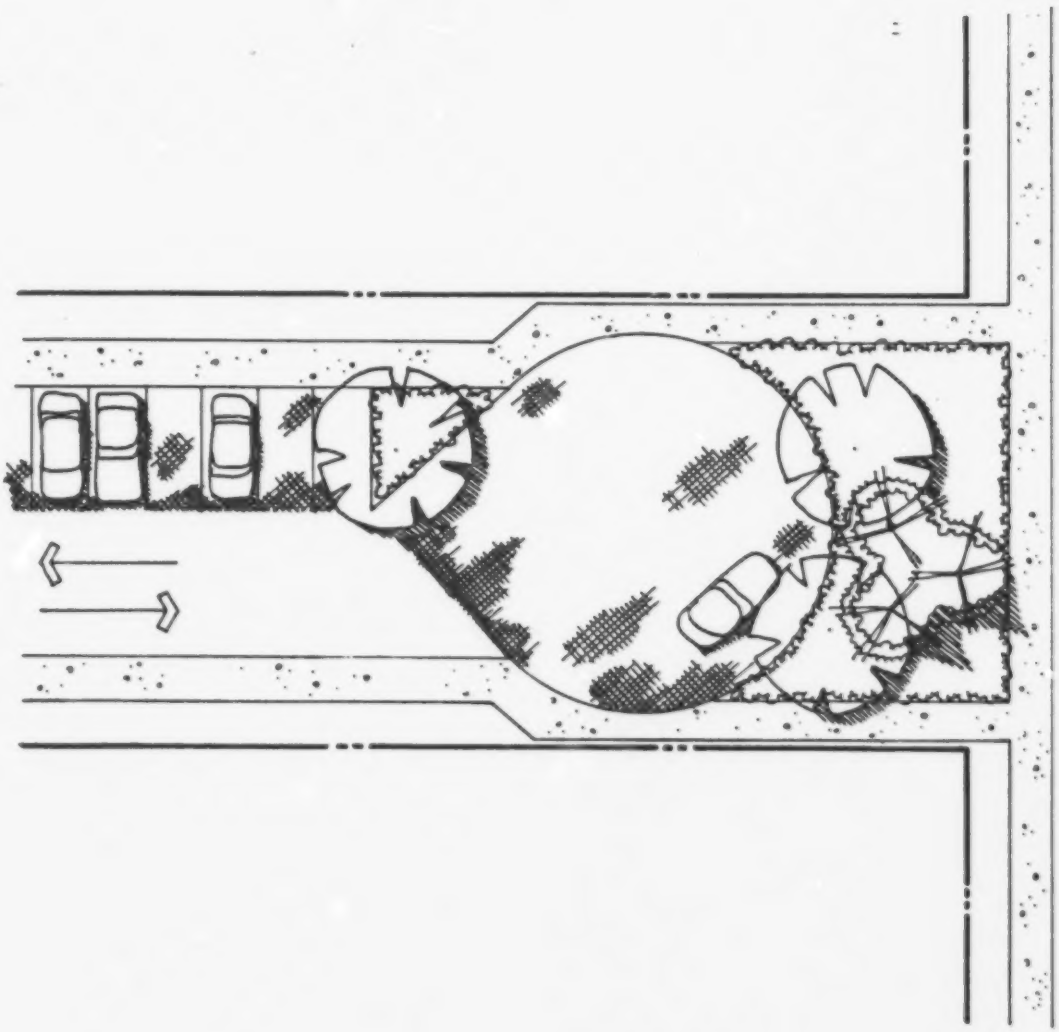

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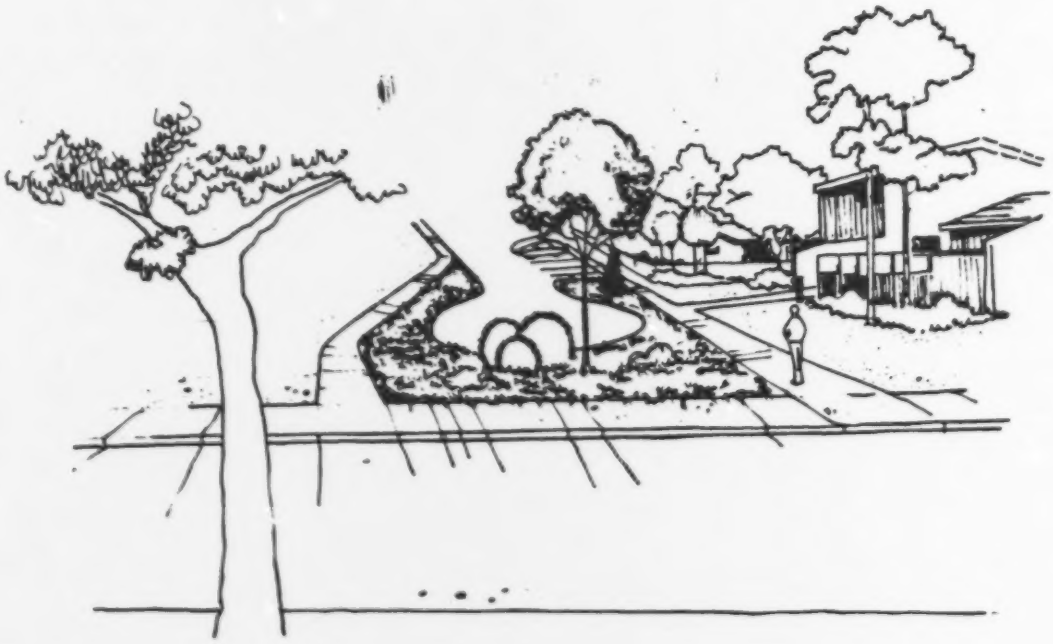
Detail of Cul-De-Sac



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Perspective of Cul-De-Sac

PARKING STRATEGY 1

INTRODUCE FURTHER RESTRICTIONS

A. FEATURES

- maintain 2 hour restrictions as at present except in selected high concentrated areas where meter parking and/or 1 hour limits may be introduced
- the intent is to make parking more available and convenient for short term residential use by discouraging employee use of on-street parking

B. SOME ADVANTAGES

- metered parking will provide easier and more effective enforcement
- employee parkers will be discouraged from parking due to cost, time restrictions, more efficient enforcement, and greater inconvenience
- parking will be more available and convenient for short-term commercial and residential use

C. SOME DISADVANTAGES

- employee parkers may shift to free 2 hour zone restrictions in the area if metered areas are not extended for a suitable distance
- residents will be further inconvenienced by 1 hour restrictions and/or meters if they require longer term on-street parking

PARKING STRATEGY 2

INCREASE SUPPLY

A. FEATURES

- increase on-street parking supply through angle parking at selected locations and the provision of adequate off-street parking for new developments
- maintain on-street 2 hour limit

B. SOME ADVANTAGES

- short-term parking will become more available and convenient for residents, visitors and customers
- angle parking can discourage through traffic and traffic speeds

C. SOME DISADVANTAGES

- long term on-street parking will remain an inconvenience for resident
- long term employee parking may increase due to the increased supply

PARKING STRATEGY 3

PARKING STICKER SYSTEM

A. FEATURES

- 2 hour parking restrictions remain
- residents must obtain a parking sticker from the City after showing proof of residence and vehicle registration on an annual or semi-annual basis - the sticker is displayed on the windshield of the vehicle to permit parking longer than 2 hours
- a portion of each street can be signed for residential permit parking only
- portions of the block faces which are not designated as residential parking zones will be available for long term resident parking and short-term parking on a first come basis

B. SOME ADVANTAGES

- long term on-street parking will no longer be an inconvenience for residents
- a limited amount of on-street parking will remain readily available due to the residential parking zones
- the supply of on-street parking for long term employee use will be reduced

C. SOME DISADVANTAGES

- a fee may be required for the parking sticker to cover administration costs
- overall parking usage will remain as at present or will be further aggravated as more residents park on-street
- apartment dwellers may chose to park on street in lieu of in designated off-street stalls
- the supply of on-street parking for short-term use will be reduced
- long term parkers may relocate to other streets

PARKING STRATEGY 4

DO-NOTHING

A. FEATURES

- parking restrictions remain as at present

B. SOME ADVANTAGES

- no change in parking controls and patterns is required

C. SOME DISADVANTAGES

- parking availability for residential use will continue to be a concern